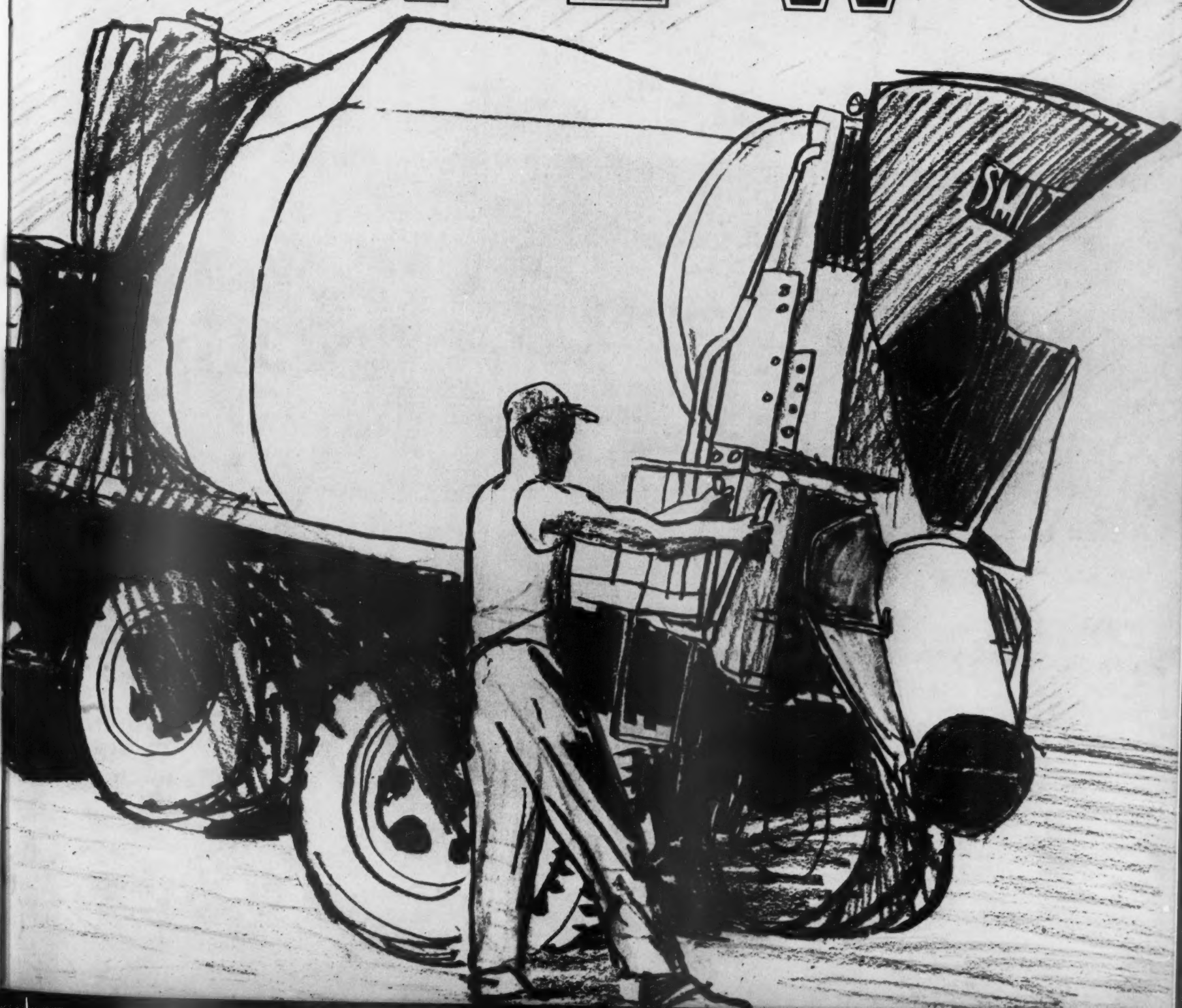


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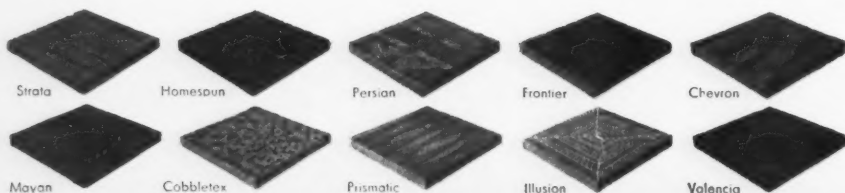
NEWS





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BPA



Cover design by Tony Palladino underscores the editorial emphasis on concrete for this issue.

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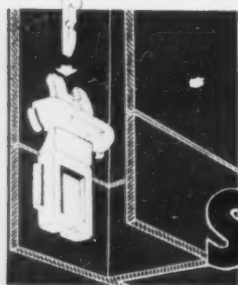
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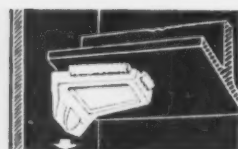
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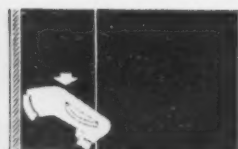
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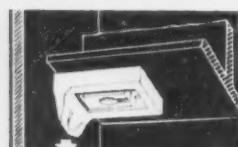
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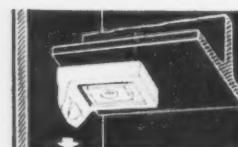
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FORECAST

VALUE OF NEW CONSTRUCTION PUT IN PLACE, JANUARY 1961*

The value of total new construction put in place in January 1961 amounted to \$3.8 billion, according to preliminary estimates of the Bureau of the Census, U. S. Department of Commerce. This amount was 15 per cent less than in December 1960, compared to a normal seasonal decline of about 13 per cent between December and January. Spending for new construction in January 1961 was approximately the same as in January 1960.

Private construction

Total new private construction expenditures in January 1961 amounted to \$2.8 billion, 12 per cent less than in December 1960 and 4 per cent under the January 1960 level. The normal seasonal decline between December and January is about 11 per cent.

Spending for construction of private nonfarm residential buildings in January 1961 amounted to \$1.4 billion. This amount was 16 per cent less than in December 1960 and 12 per cent below the January 1960 level. The normal seasonal decline between December and January is about 12 per cent.

Public construction

Total new public construction expenditures in January 1961 amounted to \$1.1 billion, 20 per cent less than in December 1960 but 15 per cent above the expenditures in January 1960. The normal seasonal decline between December and January is about 17 per cent.

Calendar year 1960 (revised)

The preliminary estimates of the value of new construction expenditures for the calendar year 1960, which were announced last month, have been revised slightly. The revised estimates indicate that: spending for total new construction in 1960 amounted to \$55.17 billion; expenditures for total new private construction amounted to \$38.93 billion; and, spending for total new public construction amounted to \$16.24 billion.

Technical note

In making comparisons with data for 1959, it should be noted that the estimates for the latter months of 1959 (beginning with September) reflect the effects of steel shortages resulting from the 1959 steel strike. Except when special surveys are undertaken, as was done during the 1959 steel strike to obtain some information about the effect of steel shortages on construction work done, these monthly estimates are not based on direct measurements. Primarily, they are derived by applying standard progress patterns (which reflect normal seasonal movements) to the value of contracts awarded prior to the current month. However, in the case of new private dwelling units, patterns are applied to the estimated value of housing starts through the current month. The estimates do not reflect the effects of the varying number of working days in each month, nor of special conditions influencing the volume of activity in any given month, such as unusual weather, overtime, postponements, and—except when special surveys are made—materials shortages and work stoppages.

*Based on "Construction Report," Bureau of the Census of the U. S. Department of Commerce.

GAZETTE

Bennett L. Raffin of Rothschild, Raffin and Weirick, San Francisco general contractors, has retired as chairman of the Advisory Committee of the San Francisco Chapter of the Engineering Societies Personnel Services. Eric Salo, Pacific Gas & Electric Co., will be the new chairman for a one year term.

Robert W. Meyer, civil and mechanical engineer, has been appointed head of the Hydraulic and Structure Div., Engineering Service Corp. of Los Angeles.

Jules Gray, AIA, chairman of the Public Relations Committee of the Georgia Chapter, AIA, has been named to receive the 1960 Producer's Council Award.

Erling Owre, Norwegian-born architect who was noted for his work with the architectural features of tunnels, died January 31 in his home at 53 Fort Hill Circle, St. George, Staten Island, N. Y. He was 84 years old.

office announcements

The formation of Leo Kornblath Associates has been announced. The new architectural and interior design firm has taken offices at 18 East 41st St., New York City, and in Hato Rey, Santurce, Puerto Rico. Mr. Kornblath was formerly a partner in the firm of Morris Lapidus, Kornblath, Harle & Leibman. He is Consulting Editor of Building Construction Illustrated.

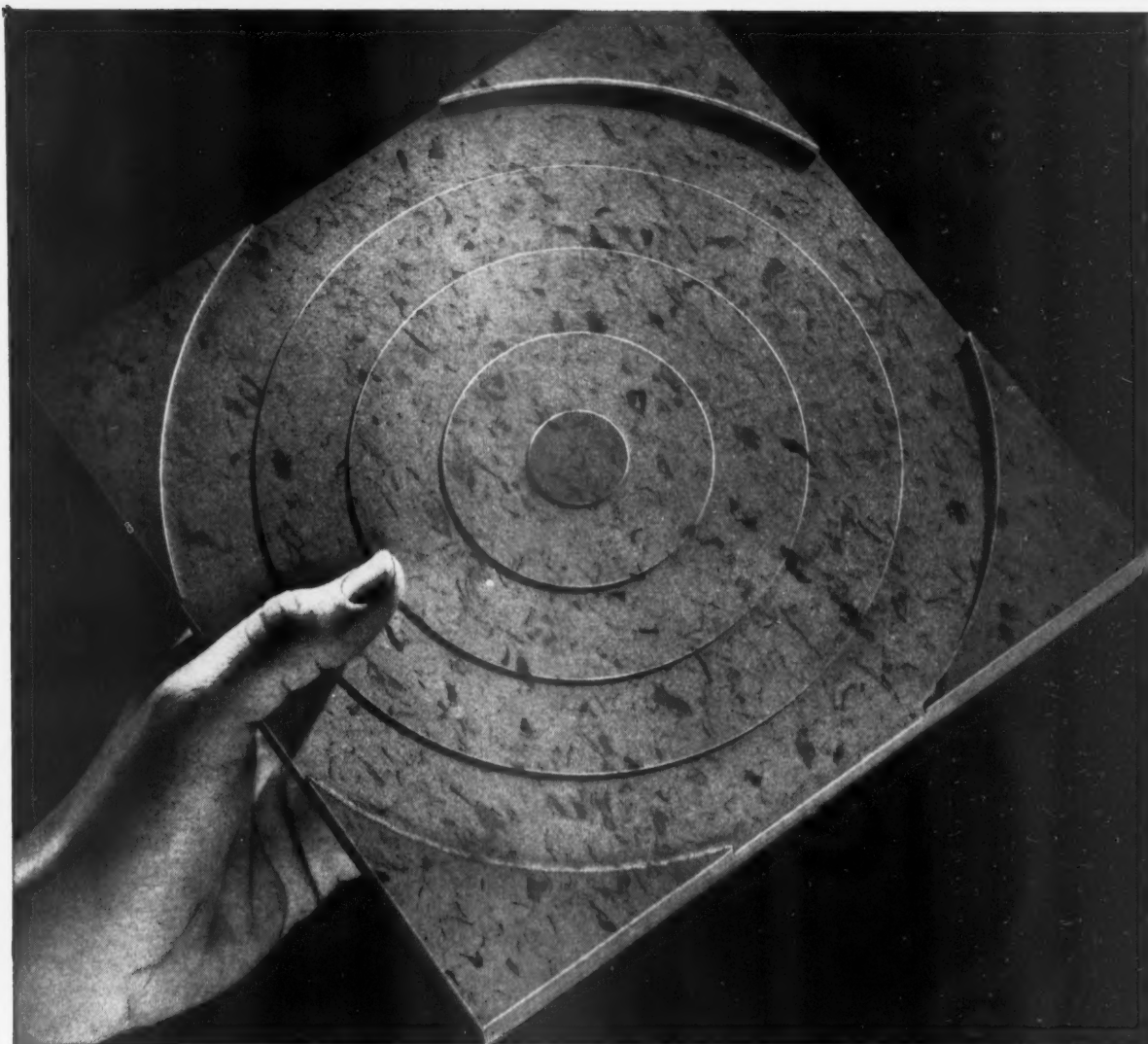
Lowell Brody, Ray E. Cumrine and Herbert W. Riemer have been named associates in Ketchum and Sharp, New York architectural firm.

As part of a program to expand its housing and urban renewal staff, Kelly & Gruzen, architects and engineers of New York and Newark, has elected Richard H. Gordon, RA, to the rank of Associate. Mr. Gordon, a housing specialist, will be concerned with architectural planning for urban renewal and other large scale housing programs.

Ward Wyatt Deems, AIA; Albert C. Martin, Jr., FAIA; and J. Edward Matin, ASCE, announce the appointment of William S. Lewis, Jr., Architect, as Vice President of the firm of Deems-Martin, Associates, Planning, Architecture, Engineering, 666 Ash St., San Diego 1, Calif.

The appointment of Thomas Hume and Donald F. Sirine, AIA, as Associates in the firm of Sherwood, Mills and Smith, Architects has been announced.

Kenneth V. Marr, Charles H. Grimes, and R. Joe Wood have become partners in the firm of Arthur A. Sauer and Associates, Civil and Structural Engineers of Sacramento, Calif.



This is an unretouched photograph of a milled-down sample of Imperial Armstrong Excelon Tile. A demonstration like this proves

without question that the textured chip design goes all the way through each tile and insures long-lasting beauty.

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* Suggested specifications and procedure for this test are available on request.

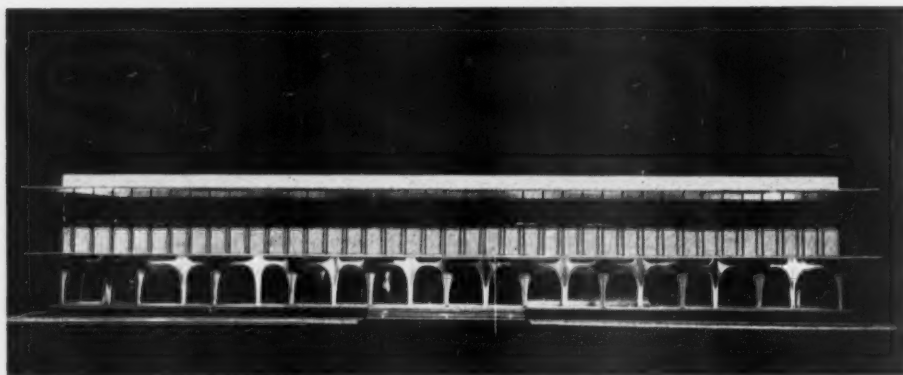
TECHNICAL DATA ON IMPERIAL EXCELON TILE For samples and complete specs see your Armstrong Architectural-Builder Consultant. **Composition:** vinyl resins and asbestos fibers; **durability:** superior; **static load limit:** 25 psi; **underfoot comfort and quiet:** fair; **grease resistance:** excellent; **alkali resistance:** excellent; **ease of maintenance:** excellent; **gauges:** 1/8" and 3/32"; **size:** 9" x 9"; **recommended uses:** above, on, or below grade; **approximate price per sq. ft. installed:** 35-45¢.

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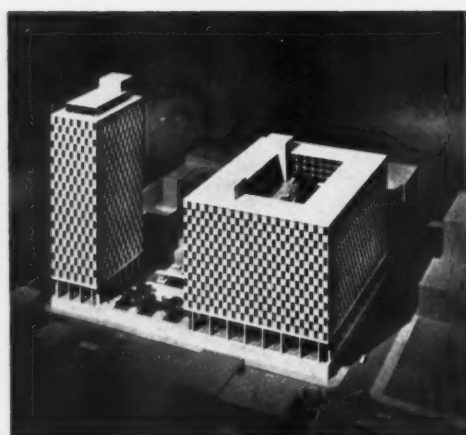


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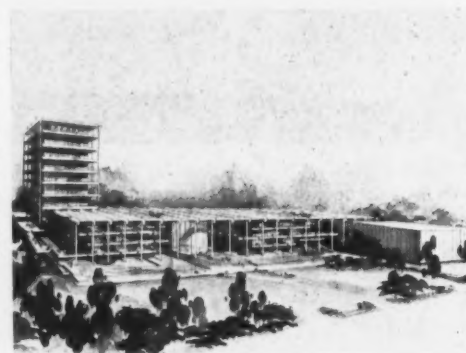
Philippine architect Leandro V. Locsin, FAIA, has been awarded the 1960 annual Pan-Pacific Architectural Citation "for consistent excellence in design" by the Hawaii Chapter, AIA. Pictured here is a model of the Commercial Credit Corp. Building in Manila, one of several buildings designed by Mr. Locsin and cited in the Award.



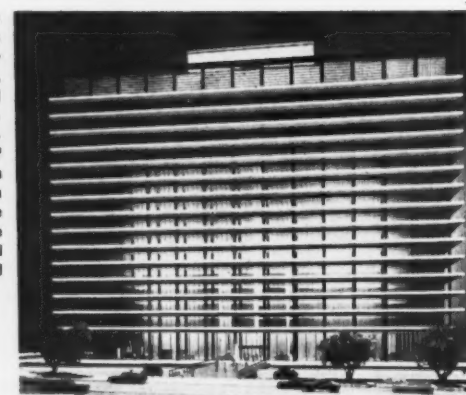
The California State Supreme Court has ruled in favor of Conrad Hilton and Architect William B. Tabler in their battle to obtain a building permit to erect a new \$27 million hotel and office center in San Francisco. The city Building Inspection Bureau Superintendent, the head of its Division of Fire Prevention and Investigation, and City Attorney Dion R. Holm had previously refused to issue a permit on the grounds that the plans for the 18-story hotel did not conform with the various codes.



The Los Angeles County Board of Supervisors has approved the schematic plans for the \$4 million Motion Picture and Television Museum. The museum is envisioned as a huge rectangular "structural cage" of pre-stressed concrete—600 feet long and 50 feet high—in which a series of floating platforms, connected by ramps and escalators, will provide a dramatic and completely flexible exhibition area. Architect: William L. Pereira and Associates, Los Angeles.



Plans for construction of the huge new general office building for the Los Angeles Department of Water and Power have been announced. With 17 floors of office space and parking for 2,400 cars, the completed structure will contain 1,683,405 square feet, making it one of the largest office buildings of its kind in the world. The \$31 million structure will occupy a 16-acre site at the western terminus of the Civic Center Mall. Architect and Engineer: Albert C. Martin and Associates, Los Angeles.



A/E NEWS

AIA convention notes

Sculptor Alexander Calder, textile weaver Anni Albers, industrial designer Florence Knoll, and architectural photographer Ezra Stoller each will receive an annual gold medal award from the AIA. Alexander Calder, of Roxbury, Conn., was awarded the AIA Fine Arts Medal "for unique originality in devising Wire Sculpture (1927), Stables (1931), Mobiles (1932), Constellations (1940), and Gongs and Towers (1951), as applied to architecture." Anni Albers of New Haven, Conn., was awarded the AIA Craftsmanship Medal "for her pioneering approach to the art of weaving, as an abstract expression of design, introducing new techniques over a long period of years." Florence Schust Knoll, of New York City, is director of design and planning of Knoll Associates, Inc. She was awarded the AIA Industrial Design Award "for her broad role in developing interior design of manufactured furniture, textiles and interior design accessories in the service of contemporary architecture here and abroad." Ezra Stoller, renowned architectural photographer of Rye, N.Y., was awarded the newly established AIA Architectural Photography Medal "for his unique leader-

ship in raising the standards of architectural photography to a high level of performance unmatched by others." The awards were voted by the AIA Board of Directors at their annual meeting in Washington, D.C., upon the recommendation of the AIA Committee on Fine Arts Awards. The Committee consists of Gordon Bunshaft; FAIA, Eero Saarinen, FAIA; and L. Bancel LaFarge, FAIA, chairman. The awards will be made at a special Awards Luncheon during the annual AIA convention at Philadelphia, April 24 to 28.

ACI/ASCE/AISC/CEC news

Widespread use of reinforced concrete is responsible for the tremendous program of urban construction underway in Russia today, and in its wake, remarkable strides are being made in concrete science and technology. Speaking at the opening session of the American Concrete Institute's 57th annual convention in St. Louis, Dr. A. Allan Bates, Vice-President for Research and Development, Portland Cement Association, said the Soviet planners and technologists are placing increased emphasis on the production of precast concrete structures as the means of achieving maximum urbanization and industrialization in the shortest possible time.

That they have succeeded is evidenced by the fact that Russia's population today is almost evenly divided between the cities and rural areas. Thirty-five years ago, probably fewer than 15 per cent of the population were city dwellers engaged in industry and commerce. Much of this urbanization has been accomplished in the last ten years, and the pace is being stepped up so that today much of the Soviet Union looks like a vast construction site, Dr. Bates said.

Dr. Bates, who headed a U.S. delegation of concrete and construction experts which toured Russia last summer, said the group was given free access to research and development institutes, factories, and construction operations in all areas of the Soviet Union.

Reinforced concrete has been the key to Russia's urbanization because Soviet leaders surmised that they could not modernize their country without industrializing construction itself. The answer was assembly-line production of precast concrete building units.

Today more than 2,000 factories are turning out these precast concrete

components . . . and more factories are going into operation every month. These plants are automated to such an extent, Dr. Bates explained, that the high capital investment would be seriously questioned if resorted to in comparable factories in the U.S. The productivity of these plants in terms of completed apartments, industrial buildings, transportation structures, is most impressive. For instance, every unit of the apartment building is precast, including foundations, walls, floors, roofs, stairways, and when used, beams, columns, and girders. Complete precast kitchens and baths with all service lines cast in place are delivered to building sites.

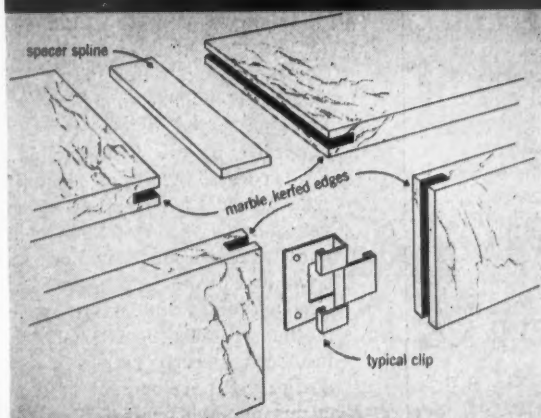
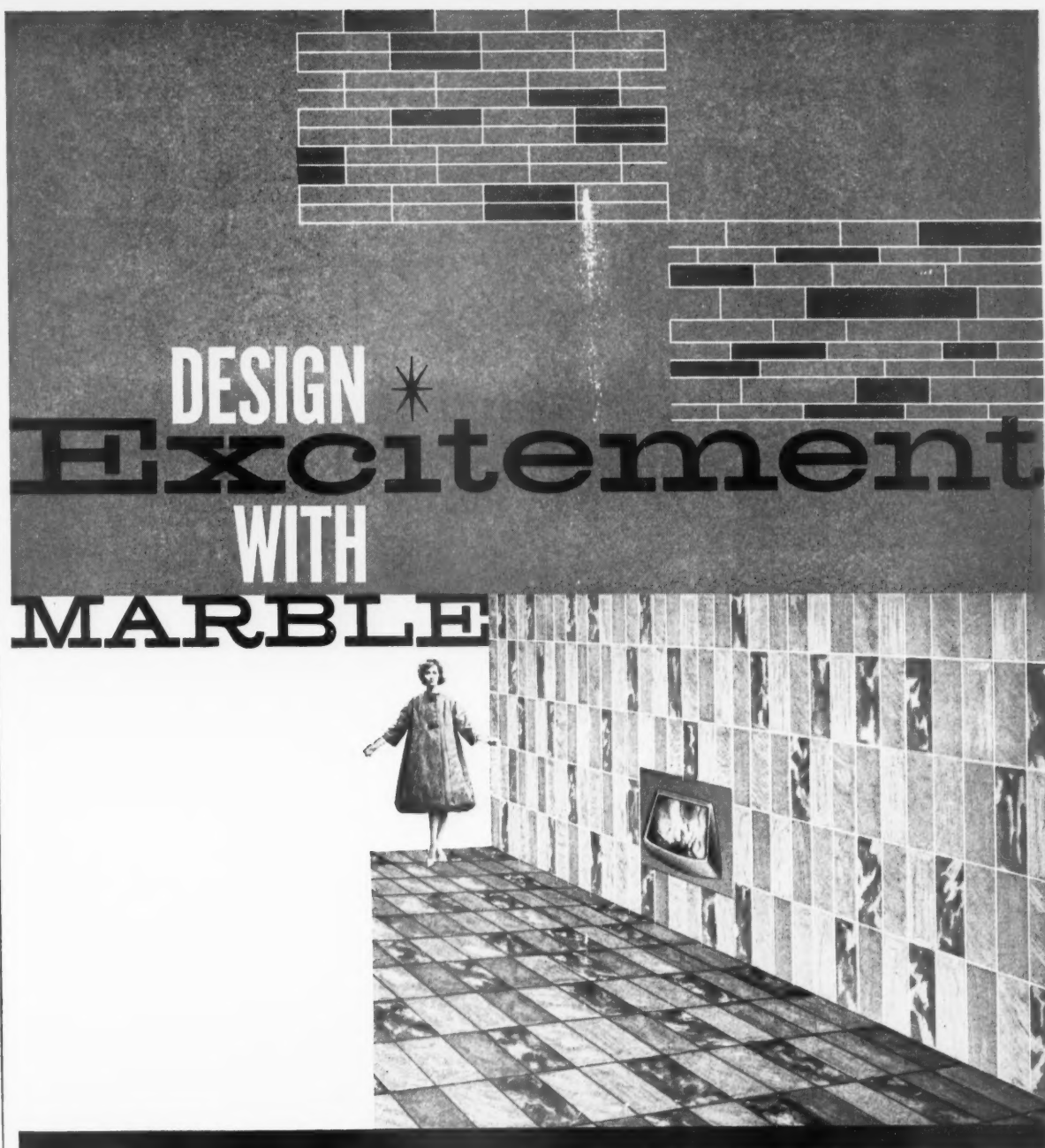
Last year the Russians began apartment construction in which complete flats, including kitchen, bath and several rooms are precast and piled together to form a multiple-dwelling apartment house of any size. With such procedures in use, the erection crew may comprise little more than a crane operator and six semi-skilled workers to attach crane slings and connect fittings.

The Soviet technologists, who remain continuously well informed of worldwide technical advances in concrete, have also developed built-in protection against the harsh Russian winters. Sandwich panels with foamed concrete cores are a standard product. Extensive use is also made of lightweight insulating aggregates, of porous concrete with open gap-graded aggregate mix, of double waffle-slab panels enclosing central insulating air zones, of concrete mixes incorporating wood fibers and other non-conducting organic substances. All of these concrete products are factory produced, after development by Soviet research institutes.

There are several of these central research institutes which are, of course, government owned, Dr. Bates said. They control every activity in concrete work, from the geological search for raw materials to the design of finished structures. Applied research and development are performed on a wide scale, and because of the powerful central position of the research institutes, results are put into practice quickly.

High quality concrete making is also well known. Very dry mixes, high in cement content, heavily vibrated, tamped, pressed, or rolled into forms and afterward steam-cured, are used

(Continued on page 6)



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A/E NEWS

(Continued from page 5)

extensively. Many of the plants use curing cycles notably higher in temperature and somewhat shorter in time than generally permitted in the U.S.

Natural aggregates of high quality are relatively scarce in the Soviet steppes, and as a result, a vigorous program calling for the development and use of synthetic aggregates is being pursued. And to compensate for aggregate deficiencies, Russian concrete producers specify high cement content.

Cement plants in the USSR are essentially similar to U.S. facilities. With the exception of some major equipment which is imported, all new plants are designed and built according to standards developed in the research institutes. Cement production has been increasing greatly in recent years and continuing annual increases of some 7 to 8 million tons (35 to 40 million barrels) are planned for the years up to 1965.

Highlighting the St. Louis convention was the presentation of the ACI 1960 Awards to five engineers by ACI President Joe W. Kelly, of the University of California, Berkeley. The Turner Medal was awarded to Stanton Walker "for his many contributions to the basic knowledge of concrete through published literature and active participation in the work of technical committees of the Institute." Mr. Walker, ACI Past President (1947) and an honorary member (1958), is Director of Engineering of both the National Sand and Gravel Association and of the National Ready Mixed Concrete Association. He is also a director of the Joint Research Foundation of NSGA and NRMCA at the University of Maryland.

As recipient of the Lindau Award, Dr. Anton Tedesko was cited for "his numerous and outstanding contributions to the development and use of long-span concrete structures as exemplified by the thin-shelled arch." Dr. Tedesko, who was elected to the ACI Board of Direction at the convention, is a Vice President of Roberts and Schaefer Co., New York and Chicago consulting engineers. An early exponent of industrial production methods in shell roof construction, he has been directly responsible for the design and development of more than 60 major shell projects.

Dr. Tedesko has been a consultant to Headquarters, U.S. Air Force, and is a member of the Reinforced Concrete Research Council, the International Association of Bridge and Structural Engineers, and is a former director of the Illinois section, American Society of Civil Engineers.

The Kennedy Award was presented to Dr. A. Allan Bates for "untiring efforts as chairman and member of the ACI Building Committee, successfully culminated in the outstanding architectural masterpiece housing the Institute headquarters." (The ultra modern, all-concrete building located in northwest Detroit was built in 1958). Dr. Bates, currently President of the American Society for Testing Materials, is also serving on the ACI Board of Direction and is a member of the executive committee of Building Advisory Research Board of the National Academy of Sciences. Other membership affiliations include the American Society of Civil Engineers, American Institute of Mining, Metallurgical and Petroleum Engineers, American Chemical Society, American Ceramic Society, American Society for Metals, and Western Society of Engineers.

Henry T. Toennies, Assistant Director of Engineering for the National Concrete Masonry Association, was awarded the Wason Medal for Research for his paper, "Artificial Carbonation of Concrete Masonry Units," published in the February, 1960, ACI Journal. The Wason Medal rewards the ACI member making the most noteworthy research reported in an Institute paper during the publication year.

The Wason Medal for Most Meritorious Paper was awarded Robert A. Williamson for his paper, "Performance and Design of Special Purpose Blast Resistant Structures," which appeared in the ACI Journal of May, 1960. A member of ACI since 1951, Mr. Williamson is also affiliated with the American Society of Civil Engineers and the Structural Engineers Association of Southern California.

The ACI convention was also the scene of the election of Treval C. Powers to honorary membership in that organization. Mr. Powers, Research Counselor in the Research and Development Division of the Portland Cement Association, became the 32nd person so honored during the 55-year history of ACI. His many contributions which have led to a better understanding of the chemical and phy-

sical phenomena underlying the formation of concrete from its component materials, were cited as the basis for Mr. Powers' commendation by ACI.

New York International Airport has been selected by the *American Society of Civil Engineers* for its 1961 award as the Outstanding Civil Engineering Achievement of the year, it was announced at Society headquarters in New York City.

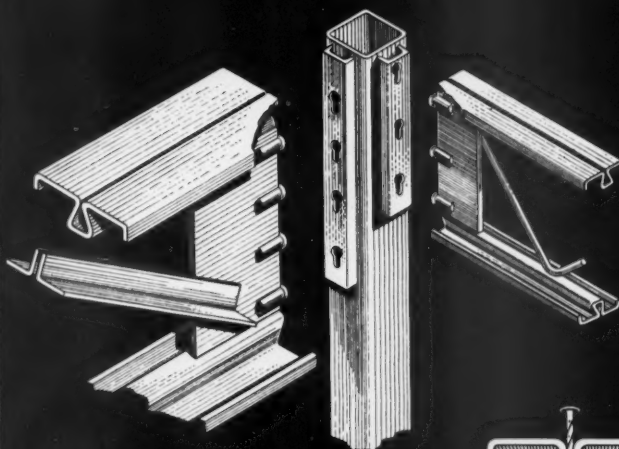
International Airport was one of 11 nominations made in the competition, which in 1960 was won by the St. Lawrence Seaway and Power Project. Judging was made by a jury of engineering magazine editors, and its decision was ratified by the Society's Board of Direction. The jury decided that the civil engineering involved in New York International is of a magnitude unprecedented in the history of airport planning, design and construction. Other projects nominated in the 1961 competition were: The Niagara Falls Power Development; Portage Lake Bridge, linking Houghton and Hancock, Mich.; Intelx Postoffice Building, Providence, R.I.; Pan American World Airways Terminal at International Airport, New York; Chase Manhattan Bank, New York; Dresden Nuclear Power Station, Chicago; Hyperion Effluent Outfall, El Segundo, Calif.; The Geyers Power Plant, Sonoma, Calif.; Lloyd Shopping Center, Portland, Ore.; and Grand Isle Sulphur Mine, Gulf of Mexico.

Ludwig Mies van der Rohe was awarded the J. Lloyd Kimbrough Medal by the *American Institute of Steel Construction, Inc.*, for his "integrity of design and his dedication to the honest expression of structure." The Kimbrough award, established in 1938 in memory of the ASIC's first president, cites the renowned architect for having "done more to further public awareness and appreciation of the aesthetic possibilities of exposed structural steel than any other architect." In the 22-year history of the Kimbrough Medal, this is the fourth time it has been awarded.

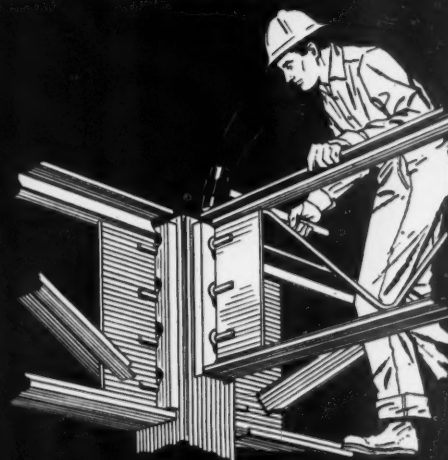
The Consulting Engineers Council, national organization of engineers in private practice, has just published a new booklet describing its purpose, organization, membership, objectives and accomplishments. With headquarters in Springfield, Illinois, the group is a national federation of state and regional associations of consulting engineers, numbering more than 1,600 individual members. Available to the

(Continued on page 8)

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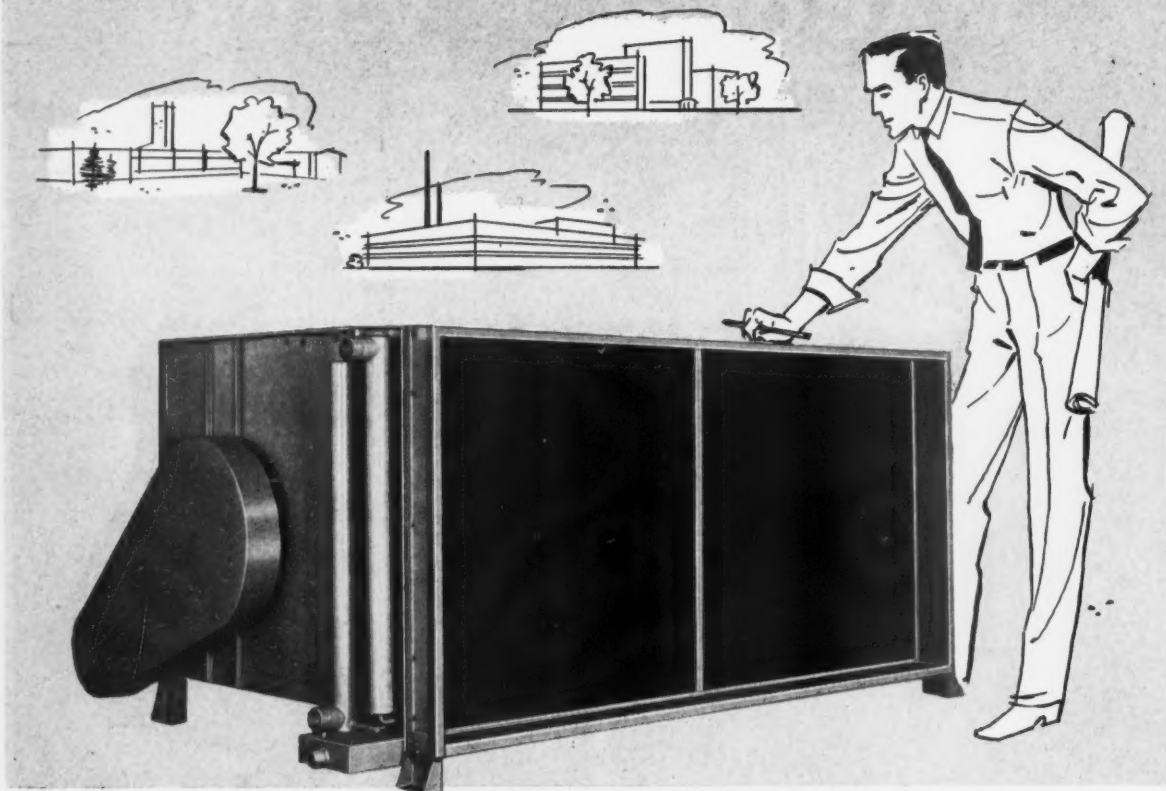
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A/E NEWS

(Continued from page 7)

public, the new booklet is proving to be an effective tool in informing people of the consulting engineer's role in today's society, according to national President Hueston M. Smith, St. Louis. Each year, CEC publishes a year book that describes what it has accomplished and what it plans to do. Copies of the current year book, in addition to the new descriptive booklet, are available on request from CEC headquarters, 322 Reisch Building, Springfield, Illinois.

West coast report

Alain Le Normand, architect for the University of Paris, who is one of the finalists in the Century 21 Exposition international competition for design of a spectacular fountain, believes the 1962 world's fair reflects the "dynamic development" of the United States. M. Le Normand, in Seattle to view the site of the \$250,000 fountain, and to confer with officials of the Seattle Municipal Art Commission, Ewen C. Dingwall, Century 21 general manager, and Paul Thiry, the fair's primary architect, is associated with Parisian sculptor, Adam on the design of the fountain.

Construction is scheduled to begin early this spring on a four-story building with a dramatic solution to an unusual problem. The \$300,000 black granite-faced structure, announced by the Clifton Investment Co. for 420 N. Rodeo Drive, Beverly Hills, will feature a "floating" main floor, entrance to which will be over a 10-foot long bridge. "Meeting the city's parking requirements of one space for every 500 square feet of building on a 50-foot wide lot was a problem in itself," stated Welton Becket, FAIA, president of Welton Becket and Associates, architects and engineers for the structure. "To do this, we had to weigh building area against parking space until we achieved the perfect balance. However, this resulted in a structure which did not offer sufficient depth to provide a main floor sales area with as much space as the client required.

"We overcame this obstacle by elevating the main floor and recessing it 10 feet from the sidewalk, giving passersby and persons entering the building a view of the basement sales floor as well as the main floor." Completion of the project is expected by the end of the year.

Circle 107 for further information about WESTERN PINE PP. 9-12→

Architectural & Engineering News



SEASONED WOOD MEANS SOUNDER FRAMING

Quality builders know that seasoned wood means a better home. What's more, seasoned wood has more holding power. It yields better at joints, resisting bowing, warping or cupping. Straight lines and true angles are applied.

A.I.A. No. 19-A-1



...lumber means a truer framework, and a sounder skeleton means a
 ...lumber is easier to handle, easier to work. It has absolute nail-
 ...our lumber dealer's or the job site: never a loss due to excessive
 ...ht, stable lumber also means less shimming when walls and floors

*See how the right framing
 grade can save you money!*











WESTERN PINE ASSOCIATION
 QUALITY GRADED LUMBER



A.I.A. No. 19-A-1

THE RIGHT GRADE FOR THE RIGHT FRAMING USE SAVES YOU MONEY!



SPECIES	Thick- ness	Width	Length
DOUGLAS FIR 	2" & up	2" & up	6' & up
LARCH 	2" & up	2" & up	6' & up
WESTERN HEMLOCK 	2" & up	2" & up	6' & up
WHITE FIR 	2" to 4"	2" & up	6' & up
ENGELMANN SPRUCE 	2" to 4"	2" & up	6' & up
PONDEROSA PINE 	2" to 4"	2" & up	6' & up
LOGGÉPOLE PINE 	2" to 4"	2" & up	6' & up
RED CEDAR and INCENSE CEDAR 	2" to 4"	2" & up	6' & up
IDAHO WHITE PINE  and SUGAR PINE 			

CONSTRUCTION

High quality grade in which appearance as well as strength is considered. Maximum knot size, 1 1/2" in four-inch widths, up to 3" in twelve-inch widths.



Primary advantages of this grade are appearance and higher stress values for special engineered designs.

2 x 4's are suitable for load-bearing studs and supporting members. When high stress rating is required, specify 1500f Industrial Grade.

2 x 6's and wider are graded primarily for use under bending stress. Also suitable for tension and compression members. Stress rated at 1500f.

Same as above. 


Same as above. 

Widely used for all framing purposes; load bearing studs, joists, rafters. It is not stress-graded, and may be used for structural members by reference to tables of assigned working stresses and span tables (see FHA Minimum Property Standards or write Western Pine Association).

Suited for all framing purposes. Not stress graded and may be used for structural members by reference to tables of assigned working stresses and span tables (see FHA Minimum Property Standards or write Western Pine Association).

Same as above. 

Same as above. 

Same as above. 

STANDARD

Graded primarily for strength rather than appearance. Knots allowed larger than in CONSTRUCTION Grade.



Usually combined with CONSTRUCTION Grade for framing and may be used interchangeably for load-bearing studs. Joist and rafter spans for this grade are practically identical to those for CONSTRUCTION Grade.


2 x 4's are suitable for load bearing studs and supporting members. When a stress-rating is required, specify 1200f Industrial Grade.


2 x 6's and wider are graded primarily for use under bending stress. Also suitable for tension and compression members. Stress rated at 1200f.

Same as above. 

Same as above. 

May be used for same framing purposes as CONSTRUCTION Grade, but allowable spans for joists and rafters will be somewhat reduced. Not stress-graded and may be used for structural members by reference to tables of assigned working stresses and span tables (see FHA Minimum Property Standards or write Western Pine Association).

Same as above. 

Same as above. 

Same as above. 

Same as above. 

UTILITY

Graded for economic appearance not a factor larger than in CONSTRUCTION Grade.





An important grade for framing costs, yet entirely suitable for certain uses:


2 x 4's widely used for supporting roof and ceiling partitions.

2 x 6's and wider used for rafters on limited spans.


Same as above. 


Same as above. 

Same as above. 

Same as above. 

Same as above. 

Same as above. 

Same as above. 

These species not commonly used as framing lumber. Straight, uniform grain and soft texture provide qualities. Primarily useful for fine cabinet work, built-ins, millwork and specialty items.



WESTERN PINE ASSOCIATION—Quality Graded Lumber

Yeon Building, Portland 4, Oregon

UTILITY

For economical construction, knots are not a factor. Knots allowed in **CONSTRUCTION** or **RD Grade**.



GRADING PRACTICES of Western Pine Association member mills are closely supervised by the Association to assure outstanding uniformity. WPA grading rules and supervision have helped make Western Pine Region lumber products of highest integrity and repute.

ant grade for reducing build-
yet entirely satisfactory for
es:

ely used for studs when sup-
roof and ceiling only (one
top floors) and all non-load-
partitions.

d wider widely used for joists
ers on limited spans.

Along with Larch, one of the strongest of the
softwoods. Its load bearing capacity equals
many mild steels and, of course, is lighter.

above. 

Equal to Douglas Fir in strength and is often
combined and marketed as Douglas Fir-Larch.

above. 

Light in weight when seasoned. Nails well and
stays in place well. Straight-grained, smooth
appearance, off-white color.

above. 

A best buy for light framing. A non-resinous
wood, light in weight, which nails well and
works easily, making it very desirable for build-
ing and prefabrication. Smooth blending knots
and attractive off-white color.

above. 

Excellent appearance, due to small knots. Light
in color and weight.

above. 

Widely used in the West. Straight grained,
light weight, works well, stays in place.

above. 

Not widely manufactured in larger sizes. Small
knots and straight grain make it a good species
for components and prefabrication.

above. 

Durability and resistance to decay make the
cedars excellent for sills and exposed work.
Very stable and decorative.

ture provide exceptional working

Lumber





CONCRETE REVIEW/1961

A/E News presents a round-up of some of the recent developments in concrete technology. Among the subjects covered are: the ACI 55-year index; a process for constructing thin shell architectural shapes; concrete scaling problems; concrete compression test methods; and excessive moisture.

Guide to concrete progress

More than a half-century of important writings in concrete technology are listed in the *ACI 55-year Index, 1905-1959*, which will be published early this year by the American Concrete Institute.

The Index is a comprehensive guide to technical papers which appeared in the *ACI Proceedings* from 1905 to 1929 and in the monthly *ACI Journal* from 1929 to 1959. Each paper is indexed by title, author, and major subject classification. About 18,000 entries are listed together, with major subject headings in bold face type to aid the user in locating material.

Also indexed are published discussions of *ACI Journal* papers, including the individual discussers. In addition, a special synopsis section is featured, devoted to brief summaries of all technical papers published in the *ACI Journal* since 1929.

The new ACI Index, of 6 x 9-in. format, contains more than 350 pages, with hard covers and standard library binding. It is available at \$9.00 per copy from the American Concrete Institute, P.O. Box 4754, Redford Station, Detroit 19, Mich.

Thin-shell architectural forms

An A & M College of Texas professor has developed a rapid and inexpensive process for constructing thin shell architectural shapes for modern building design innovations.

He is James H. Marsh III, who teaches structures courses in the Division of Architecture and serves as a researcher in the Architectural Research Division of the Texas Engineering Experiment Station at College Station, Texas, which report Professor Marsh's development.

His process for constructing the thin shell architectural shapes was developed on his own time and has a patent pending status with the U.S. Patent Office. In the process, proposed architectural shapes are projected to a flat surface so that steel reinforcing can be laid out on the ground for fabrication.

After steel bars are in place and secured, steel mesh is laid over the reinforcing steel and attached to it. Upon completion of steel fabrication, the projected shape is then transformed into the desired three-dimensional shape by applying tensile forces at predetermined points. The geometric form is shaped as the legs are drawn toward one another by cables. Once the steel shape has reached its final form, it is attached securely to its foundation.

Lightweight concrete, plastic, or other surfacing material is then sprayed or applied to the wire mesh covering the steel frame. At this stage, the "shell" forms the roof and parts of the walls. Further enclosing can be done as required or as necessary.

The process is stated to have four major advantages:

1. The concrete is applied without the necessity for conventional construction forms which results in substantial savings in materials and labor and hence, cost.
2. The speed with which this shell can be formed, far exceeds the time necessary for conventional systems of construction.
3. The major portion of all work is performed on the ground surface, including the placing of electrical conduits and wiring together of steel and mesh. This provides for a considerably safer operation and allows top efficiency of the crew.
4. The architectural shapes and forms which can be achieved with this system are numerous and varied.

Further information may be had by writing to Professor Marsh at the Texas Engineering Experiment Station, College Station, Texas.

Concrete scaling problems

Concrete pavements, parking areas, walks and curbs frequently are subjected to severe exposure. Excessive use of de-icing agents, frequent freezing and thawing, frequent wetting and drying, or cycles of extreme, variations in temperature contribute to surface scaling and disintegration of concrete. Air-entrained concrete has demonstrated good resistance to scaling and disintegration but maximum resistance to scaling and greatest durability can be achieved only when adequate air entrainment is combined with quality materials in properly proportioned concrete mixes of low water-cement ratios,

low total water content, and with proper mixing, placing, finishing, curing and protection practices.

Master Builders Co. of Cleveland, Ohio, which recently opened one of the nation's most modern and complete concrete research laboratories offers the following suggestions as "Do's" and "Don'ts" for obtaining best results:

The "Do's"

1. Do use 5 to 7 per cent entrained air. With 1½" top-size aggregate, air content in the 5-6 per cent range is required. For ¾" or 1" top-size aggregate, entrained air should be in the 6-7 per cent range.
2. Do use high strength concrete. While relatively low-strength concrete may serve the structural requirements, durability is secured only with low water-cement ratios producing low permeability and high-strength concrete.
3. Do use quality and tested materials. Fine and course aggregate should meet ASTM C-33 or have a suitable service record. The cement should meet ASTM C-150, C-175, or C-205, should be of normal temperature at time of delivery and should have no false or flash setting tendency.
4. Do use good workmanship. Proper placing and finishing are absolutely essential to long-wearing surfaces. Quality of the concrete at the surface should be the same as that throughout the slab.
5. Do use proper curing. Keeping concrete moist and at an adequate temperature for as long as possible helps to provide proper hydration of the cement and maximum strength. More complete hydration and higher strength mean greater resistance to scaling. Curing compounds of high quality properly applied are adequate.

6 Do use a surface sealer, at least on new concrete. Surface treatments of oil increase resistance to scaling. One such treatment consists of applying boiled linseed oil to clean dry concrete. Mineral oils are equally acceptable.

The "Don'ts"

1. Don't assume that air entrainment alone is enough. Without good cement, good workmanship, and careful attention to other details, adequate air entrainment is not enough to insure durability.
2. Don't add water to the concrete. Adding water lowers strength and increases absorption permeability and likelihood of scaling. If increased workability is required, have the concrete mix altered at the batching plant.
3. Don't use materials of questionable quality. Coarse aggregate with high percentages of unsound particles will contribute to pop-outs and scaling. Cement that fails to meet the specification for false or flash setting tendencies or the use of hot cement can contribute to scaling and early disintegration.
4. Don't overwork concrete. Excessive or premature bullfloating, darbying or hand or machine floating, particularly with metal tools, contributes to bleeding and reduces air content and durability of the surface. Swirled or smooth finishes may be obtained using hand floats or trowels after the concrete has stiffened.
5. Don't allow concrete to dry after finishing. Concrete should be kept moist during the entire curing period. Alternate wetting and drying during the early age of concrete will cause crazing and increase the possibility of scaling.
6. Don't apply salt to new unsealed concrete. Unsealed concrete less than one year old may scale from the effects of salt. Where the presence of de-icing agents cannot be eliminated (e.g. drippings



FIGURE 1.



FIGURE 2.



FIGURE 3.



FIGURE 4.

CONCRETE REVIEW/1961

(Continued from page 13)

from automobiles, etc.,) the concrete surface must be treated with a sealer prior to the first winter if scaling is to be avoided.

Concrete compression tests

The compressive strength test of cylindrical concrete specimens is the most common and widely used quality control test of concrete. These tests may be conducted on any prescribed time interval but generally are based on 7 and 28 day curing period. The photos illustrated the method and are supplied by Soiltest, Inc. of Chicago, Ill.:

FIGURE 1. Concrete compression test specimens are usually cylindrical with a length equal to twice the diameter. The standard size is 6" in diameter and 12" in length if the coarse aggregate does not exceed 2" in nominal size. Soiltest molds for these test specimens are of metal and have a machined metal base plate. For easy specimen removal, the molds are split longitudinally and held in the closed position by quick acting clamps.

FIGURE 2. The specimens are formed by placing the concrete in the mold in three layers of approximately equal volume. Each layer is uniformly rodded with 25 strokes of the tamping rod.

FIGURE 3. Where voids are left by the tamping rod, the sides of the mold are tapped to fill the voids. After the top layer has been rodded, the surface of the concrete is struck off with a tamping rod or straight edge. Test specifications are covered in ASTM C-31 and AASHTO T-23.

FIGURE 4. Specimens are covered with a glass or metal plate to prevent evaporation. They are removed from the mold at the end of 24 hours and stored under moist conditions. In field laboratories, special curing cans are frequently used for storage and curing.

Excessive moisture problems

Vapor is considered an enigma of mankind—on one hand it is necessary and responsible for life as we know it on earth—on the other hand, this same vapor has had a very costly and devastating effect on our buildings.

The effective function of a structure and almost all of the products used within a structure is greatly dependent upon the ability to eliminate the migration of moisture into the structure. This fact is even more prevalent in today's expertly and tightly constructed buildings. Old structures permitted moisture to escape whereas buildings built today with the benefit of better design and construction technique along with modern materials trap this moisture inside and the problems resulting from excessive moisture soon follow:

Effects of excessive moisture

For centuries vapor or moisture migration into our structures has directly or indirectly caused rotting walls, blistering and peeling paint, masonry efflorescence, warping and rotting floors, fungal or bacterial attack on construction and furnishings, dank, musty smells, mildew, insulation failures and termite problems. We have unnecessarily learned to live with these evils and it was only until recently that the construction industry was able to effectively eliminate them. To see how the problems of condensation may be met, let us first know what condensation is.

The vapor cycle

Vapor is in a constant cycle of movement. This cycle starts as evaporation from water and land

surfaces, transpiration of vegetable growth and from the hydrostatic or water level table. The atmosphere becomes saturated with moisture and releases it back to earth in the form of rain or snow—the cycle is complete and ready to start again. Vapor is continuously moving from areas of higher pressures to areas of lower pressure. This occurs because just a few feet under the ground level, the temperature remains the same . . . whether in January or July. This constant temperature or soil ambieny in the Chicago latitude is 54°F.

During cold periods, the movements are from sub-grade to atmosphere. In summer the movement is reversed. As warm vapor laden air comes in contact with a cooler surface, it cools and its vapor condenses out as free water. This is why a lemonade pitcher becomes beaded with water and the very same reason why the inside surface of a window becomes clouded with condensed moisture.

Moisture migration from site

Until comparatively recent times it was generally believed that excessive vapor in a structure originated from normal living habits—such as cooking, steam from shower or bath, automatic washers and driers, etc. True, some moisture is created in this manner; however, in the average home not more than 20 per cent is contributed by daily living habits and is just enough to produce a humidity level that is normal and comfortable. Governmental and academic research has proven that more than 80 per cent of the moisture inducted into the home is from the site. It makes little difference whether the structure is placed on high or low ground, or whether it is on a cesspool or sand dune—somewhere below the site water exists and vapor will soon rise into the building. The ravages of destructive moisture follow soon after.

Eliminating excessive moisture

In the last decade a major effort was put forth in order to try to eliminate the migration of moisture into the structure. The answer is considered quite simple—the installation of what is considered a true vapor seal. The word "true" is stated to take on an important meaning when one considers the past promiscuous use of permeable materials as vapor barriers. Building felts, papers and various plastic films that are highly permeable cannot be considered as effective vapor seals.

When specifying or approving the use of a vapor seal it should meet the following qualifications: it must be water-proof and the manufacturer must have indicated the water-vapor transmission rating. If this rating is higher than .0066 grains per square foot per hour it should not be used. Buyers should not be misled because the manufacturer states that his product meets "minimum property requirements." . . . for in this case only the very best is good enough. A true vapor seal must be strong enough to resist rupturing, puncturing or tearing during installation and must also be strong enough to maintain its water-vapor transmission rating even after the pouring of aggregate, trundling of wheelbarrows and installation foot traffic. A true vapor seal must be installed as a monolith without voids, ruptures, open or lapped seams. It must be able to expand and contract in direct ratio with the concrete under which it is placed. It must be composed of natural, stable material that will outlast the structure under which it is placed. This point is considered extremely important, because a vapor seal must function permanently. It cannot be replaced at a later date.

DUAL USE/WIRE REINFORCEMENT

Reinforcing wire fabric in a building's concrete floor slab doubles as an electric heating element in an unusual application which may very well serve as a prototype. Installed as a test, the heating system was built into Northern States Power Co's new 6,500 square foot service center and warehouse, on the outskirts of Minot, North Dakota, for which the company furnishes both electric power and telephone service.

The electric heating system, which will be tested in a building subject to normal use and under everyday conditions (including North Dakota winters which sometime produce minus 40° temperatures) is unique from four viewpoints—architect, owner, contractor and power company.

Unusual features

In the architect's planning, the use of concrete reinforcement for heating eliminates the need for a furnace room, and thus provides more usable cubic space. (Space must be provided for the necessary transformers, however, in this case, above ground, along the building's center partition.)

For the owner, the "double" use of welded wire fabric in the floor slab—as reinforcement, and as heating element—represents economy in use of material, and saves money over the cost of the more conventional systems of radiant heating, such as copper tubing for circulating hot water, or especially manufactured electric resistance cables. The elimination of furnace equipment likewise cuts costs, but balanced against this is the cost of the necessary transformers (\$675 each, in this case).

Another economy incorporated in this design is that the floor grid will be energized primarily at night to store heat in the floor and underlying area thereby eliminating an increase in the daytime demand factor. Baseboard type resistance heating is provided to supplement the "stored heat" during late afternoon hours. However, if required, a thermostat will override the preset schedule to energize the floor grid during daytime hours.

From the contractor's viewpoint, the widespread adoption of electrically charged concrete reinforcement, will change his way of installing welded wire

fabric, and will require learning techniques to make the fabric function as electric conductor as well as strengthener of the slab.

From the standpoint of the power company, if the in-service tests prove the heating system to be practical in both operational and economical aspects, then another wide market will open to take up some of the spare winter-time generating capacity which is resulting from the peakloads (in some parts of the country) built up to run summer-time air-conditioners. Also, as mentioned above, the peak demand for this system should occur at night during a normally low consumption period.

Types of welded wire fabric

In the Minot installation, three different styles (or types) of welded wire fabric were used—66-44, 66-66, and 66-68. The first pair of figures in each case refers to the 6 inch spacing of the wires; the second pair of figures designates the gauges of the wires, ranging from #4 (nearly ¼" diameter) to #8 (about ½" diameter). Since, for reinforcement purposes alone, 66-66, 66-88, or even 66-1010, may be specified, depending upon anticipated use of the floor slab—office, warehouse, etc.—the heavier styles in this case were dictated by electrical considerations.

In the major warehouse area, the heavier 66-44 was used in order to carry a heavy flow of current and provide the desired floor temperature. In the office area, 66-66 was used, because here, lower current flow and floor temperature were planned, the baseboard units helping to heat this space. The lightest style, 66-88, was placed in a sectional area of the warehouse, where less current will be required in order to maintain the desired floor temperature.

Major problem of dual use

The major problem to be solved in effecting dual use of the wire fabric as both reinforcement and electrical conductor, was how to accomplish both these functions, without impairing one or the other. To be effective as reinforcement in a concrete slab, welded wire fabric must be overlapped to assure continuity of its crack-controlling. In order to maintain a proper flow of current, the overlapping lengths of fabric had to be electrically separate.

This was effected by placing between the lengths of fabric, a 2 inch wide, ½ inch thick strip of cement asbestos lumber (transite), tied securely in place every 12 inches by electrical scotch tape, wrapped about the "sandwich," formed by the insulation and the overlapping wires.

Electrical system

In order to apply the electric potential to the lengths of wire fabric, and establish a path for the flow of the current, ¼ inch by 3 inch wide copper bars were welded across the full width of each length. At the ends nearest the transformers, which hugged the central partition wall (between the warehouse area and the offices and shops) these bars were five feet long; but at the far side, the copper buss bars were 9 feet, 10 inches long, bridged two strips of fabric and served to conduct the current from one length to its immediate neighbor. Thus, the current, led by cable from the transformers to the end of one length of fabric, followed a U-shaped path, down one length, back the other, and back to the transformer.

Seen from above, the overlapping, electrically separated, lengths of wire fabric, with their connecting cables and copper buss bars, looked like the elements from an immense toaster.

Two-stage installation

In order to facilitate the placement of the wire fabric, the welding of the copper buss bars, and the insulating and tying of the overlapped lengths, the floor slab was constructed in two stages. The first stage was a 2 inch thickness of unreinforced concrete placed over a polyethylene vapor barrier on a well compacted fill of 6 inches of selected gravel. The surface of this first 2 inch course of concrete was purposely left rough for bonding with the next course.

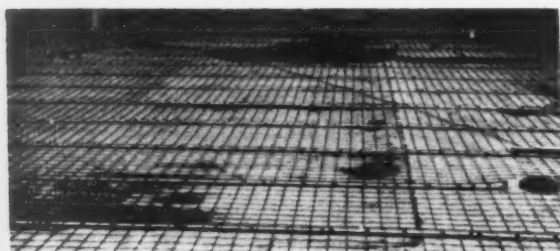
After initial set of this first, 2 inch course of concrete, the electrical contractor was permitted to move onto it, and having the benefit of its flat surface, was able to place the fabric, attach the buss bars, and tie the insulation without fear of breaking or damaging the fragile strips of asbestos cement.



A welder "tacks" longitudinal wires of the length of the welded wire fabric on to the 3" x 1/4" copper bar. Clamps keep the wires and bar in close contact. The acetylene torch flame temperature is in the 2220-2400 degrees range—hot enough to weld, but not enough to burn the wire. The fabric in this area (the warehouse of Northern States Power's new Minot service facility) is 66-44 (6" spacing, #4 gauge wires), the heaviest style in the entire job, because the heaviest currents will flow in the warehouse floor slab to give an 80° surface temperature. The welder is using a #27 Arco acetylene bronze rod. The fabric is laid out on a previously placed 2" thick course of unreinforced concrete, and will be embedded in the top, 4" thick course.



Electricians connect power cables to lugs on copper bars which lead the current into the welded wire fabric. The worker at right is kneeling in the area where one of the six dry-type transformers will be mounted. Note behind workers, the previously connected cables leading into the transformer site. Note, in the immediate foreground, the "sandwich" of overlapping lengths of wire fabric, separated by transite insulating strip, tied with electrical Scotch tape.



Like the elements of an immense toaster, the welded wire fabric is laid out on the first course of the concrete. The fabric will serve a double purpose in the second 4" concrete course in which it will be embedded. It will reinforce the concrete and will also serve as an electric heating element.

DUAL USE/WIRE REINFORCEMENT

(Continued from page 15)

With the fabric in place, cables bolted to the buss bars and led to the transformer locations, and electric tests made to be sure of proper current flow through the grid, the remaining 4 inches of concrete slab was placed. Conventional concrete was used, and concreting was done in normal manner.

The only departure from usual wire reinforced concrete construction procedure was dictated by the extreme care taken to prevent displacement of the fabric lengths or damage to the insulation. Usually, wire fabric is supported or "hooked up" into the concrete as the pour progresses, in order to position the reinforcement at or above the mid-point where it's most effective in controlling and minimizing cracking. In this case, however, it was decided to leave it in position on the previously placed 2 inch course of concrete, with the expectation that some slight displacement upward would occur (without damage to the insulation) and thus it would approach the ideal position.

The 3,000 psi 28 day ready mix concrete was allowed to moist cure 7 days under Sisalkraft. The floor area of each half of the building was divided into five slabs, each approximately 14 by 40 feet in size. The odd numbered slabs were poured first, and after they took initial set, the forms were pulled, and the even numbered slabs butted up against them. Later, 1 1/2 inch deep contraction joints were sawed between the slabs.

Power supply

Six dry-type transformers will be used to power the radiant networks of welded wire fabric in the concrete slab. Two hundred and eight volts will be applied to the transformers, but the potential applied to the wire will be only 20 volts. The current flow in the fabric is calculated to be in the 500-600 ampere range, with 45 to 55 amperes in each of the 11 longitudinal wires in each strip of fabric. (Tests made previously show that in a length of wire fabric, 95 per cent of the current will be in the longitudinal wires, with relatively little in the transverse wires, since electricity always seeks the shortest path to complete a circuit.)

Insulation

Despite the low 20 volt potential involved, the Northern States Power engineers have taken care that the current be confined to the fabric network by specifying insulation of any obstructions in the slab, or alternately, removal or detour of any wire that closely approaches any obstruction such as drains, conduits, plumbing, etc.

The calculated currents in the welded wire fabric are designed to emit 20 watts per square foot in the warehouse area, or a resultant floor surface temperature of 80° F, and 15 watts per square foot in the office-shop area, with a slightly lower floor temperature (because of the auxiliary baseboard heating). Eighty five degrees is considered the highest temperature which will not cause discomfort to the foot, but even 80° is considered ample, since the effect of radiant heating is to warm the object or the person, and not the air.

The insulating materials used in the walls and roof were styrofoam and rigid fibre board. Although the amount and kind of insulation used were standard for a building of this type, special care was taken in placement and installation. (The roof design is such that additional insulation may be added at a later date if desired.)

Temperature control

Temperatures in the Minot building will be controlled by a system of thermostats, four embedded in the floor slab itself, and others measuring the air temperature, both inside and outside. These stats will control the heating system, "predict" coming temperature changes and demands, and actually switch the transformers on and off. Because of the tremendous currents involved on the output, or fabric side of the transformers, the switching will be done on the 208 volt, or input side. Time clocks will be used in conjunction with the thermostats so that preset schedules can be arranged to take advantage of off-peak heat storage.

Engineers of the Northern States Power Co. estimate that heating the new service facility in the Minot area will require about 300,000 kilowatt hours annually, or, at an estimated demand and energy rate of 1.5 cent per kwh, will represent a heating bill of about \$4,500. For over 105,000 cubic feet of space, the monthly heating average will probably be about \$375.

Similar installations

Although the Minot installation incorporates the latest thinking in radiant heating, and in the "double" use of welded wire fabric, it is not the only such installation. Actually, the first experimentation in electrically heating slabs using material other than especially manufactured wire, was done by Commonwealth Edison Co. in Chicago, starting in 1945. Three installations were made between 1945 and 1957 in which the resistance material employed was expanded metal or diamond mesh. In 1957 the use of wire fabric was suggested because of the ease of unrolling and placing fabric, and because of the economy inherent in the "double" use.

Accordingly, in the fall of 1957, Commonwealth Edison erected a service facility at DeKalb in which the resistance material was welded wire fabric. Because of the generally favorable results from this "in-service" test, engineers of the Chicago utility firm next decided to test wire fabric in the laboratory to determine the relationships of current flow, resistances, and wire sizes. From this research (and endorsing the practical results at DeKalb) it was discovered that as current increases in a magnetic material such as steel, the resistance due to "skin effect" decreases and therefore the effective resistance decreases.

Results of the Commonwealth Edison tests and experience were furnished the Northern States Power Co. engineers, and inspired them to continue the experimentation.

Acknowledgments

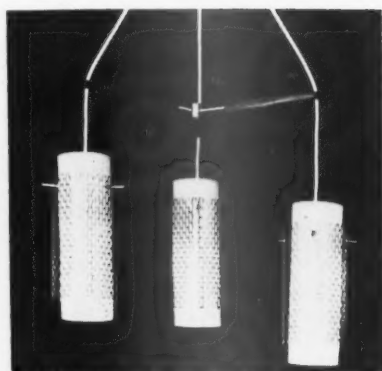
Initial planning for the new facility, which will include service truck garage, warehouse, meter shop, line crew room, telephone service facilities and office space was done by architect James V. DeLoi of Minot. Engineer Harold Teachout of the NSP Minneapolis headquarters office was technical adviser in charge of design.

Consultant to the architect, and designer of preliminary plans for the dual purpose welded wire fabric heating systems, was Kenneth O. Tompt, electrical consulting engineer of Fargo, N. D.

Mackley Construction Co. (AGC), Minot, holds the general contract for the project. Holmes Electric Co. did the electrical work under a sub-contract, including placement, fastening, tying, and connecting of the fabric and furnishing and connection of the transformers. Harry R. Cook and Sons hold the mechanical subcontract.

PRODUCTS, EQUIPMENT, MATERIALS

Report of recent developments by industry, based on data furnished by mfrs. Inquiry cards for further information face pages 1 and 52.



INDOOR AND OUTDOOR LIGHTING FIXTURES

MFR'S DESCRIPTION: 27 lighting fixtures for indoor and outdoor use added to line.

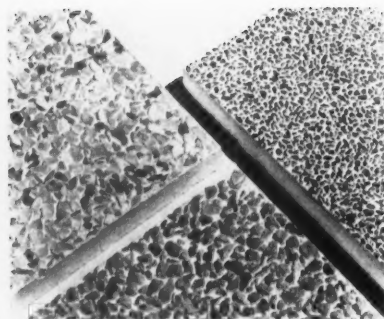
USES: lighting applications.

SPECS/FEATURES: new fixtures include: two chandeliers, four pendants and three spreader kits, two pull-downs, four ceiling lights, one hall fixture, three bathroom mirror fixtures, one indoor wall bracket, two outdoor wall brackets, two outdoor post lanterns, one outdoor post, electric eye accessory (with and without convenience outlet). The addition of the 27 fixtures brings to 229 the number in mfr's line. Model 106 (shown above) with 107 spreader kit is a pendant cluster in polished brass with white glass and spreader in walnut and brass; two other spreader kits are available to transform this fixture at any time into either a two-light or five-light unit.

AIA FILE NO. 31-F-22,23

MFR: EMERSON ELECTRIC CO.

Circle 200 for further information



AGGREGATE CONCRETE FOR PANELS & SHAPES

MFR'S DESCRIPTION: *Gemset* is a high-quality, exposed, special aggregate concrete for precast architectural panels and shapes.

USES: column covers or mullions, window surrounds, copings, specialty shapes, and custom wall or spandrel panels.

SPECS/FEATURES: mfr claims precise regulation of aggregate size, color and texture; exact conformation to specified shape and dimension; absolute trueness of surface; and accurate, uniform curing. The material is available in various thicknesses and sizes; virtually any size or shape the architect requires can be provided. Aggregates are imbedded a full $\frac{3}{4}$ ", and units are reinforced with galvanized steel wire or bars. A wide variety of aggregate types, mixtures, sizes and colors is available, and still others can be developed to meet particular requirements.

AIA FILE NO. 4-K-1

MFR: INDIANA LIMESTONE CO., INC.

Circle 201 for further information



FREE-STANDING GLASS ENCLOSED FIREPLACE

MFR'S DESCRIPTION: *Regency* free-standing fireplace is offered to meet contemporary design requirements.

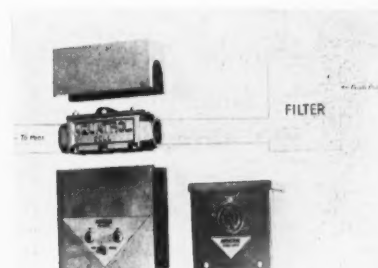
USES: residential applications.

SPECS/FEATURES: the hearth is raised and surrounds the fire on all sides. The hearth is made up of simulated ceramic tiles of porcelain-enameled steel, $8\frac{1}{2}$ " square, attached to the steel framing of the fireplace unit. The fireplace is a "see-through" design, with removable panels of $\frac{1}{4}$ "-thick heat-resistant plate glass on three sides and the fourth side enclosed by a black mesh firescreen. A star-shaped, sloping hood covers the firebox area and joins a 10" square flue housing that contains an 8"-round steel flue. Flue and flue housing sections offered as accessory equipment. With mfr's proper venting attachments and extensions to accommodate varying ceilings, the flue is installed for venting directly through a ceiling or elbowing into a Class A masonry or all-metal prefabricated chimney. A sliding collar fits over the upper part of the flue to form a correct fit with most room heights.

AIA FILE NO. 5-H

MFR: THE MAJESTIC CO.

Circle 202 for further information



AUTOMATED SWIMMING POOL PURIFIER

MFR'S DESCRIPTION: an electronic purifier that ends the need for swimming pool chemicals such as chlorine and acid.

USES: residential, commercial and institutional pools.

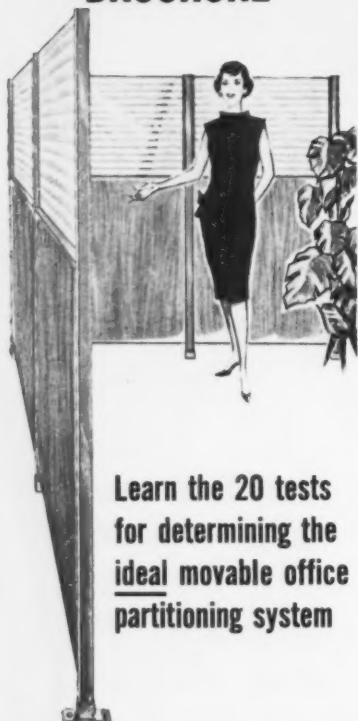
SPECS/FEATURES: the system consists of three basic units; a cell containing pure silver and virgin copper, power supply and programmer, or highly accurate timer. In operation, ions of silver and copper are rammed into solution by the power supply. The programmer sends impulses in fixed and exacting cycles into the cell which in turn creates a whirling turbulence in its chamber which allows every drop of water to become charged with ions of the copper and silver. These ionized purifiers then neutralize harmful algae and bacteria. Installation of *Aquatrol* requires only minor plumbing and electrical work.

AIA FILE NO. 35-F-2

MFR: AQUATRONIC INDUSTRIES INC.

Circle 203 for further information

BEFORE YOU BUY OFFICE PARTITIONS, SEND FOR YOUR "CHECK THE FACTS" BROCHURE



Learn the 20 tests
for determining the
ideal movable office
partitioning system

Selecting office partitions isn't easy . . . it's an investment you have to "live with" daily. Haskelite's "Check the Facts" brochure has a check list of 20 requirements that an ideal partitioning system must meet. This check list will enable you to "test" any of the various partitioning systems now available. That way, you can judge for yourself the merits of different partitions—and make the right choice when beautifying your office space in a practical way.

HASKELITE EXEC-UNITS

... ideal movable office partitions

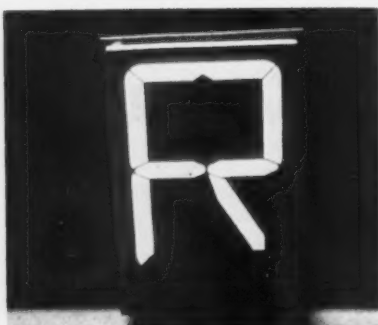
HASKELITE MANUFACTURING
DIVISION OF EVANS PRODUCTS COMPANY
GRAND RAPIDS, MICHIGAN

Please send "Check the Facts" brochure

NAME _____
COMPANY _____
ADDRESS _____
CITY _____ ZONE _____ STATE _____
A.E.

Circle 108 for further information

PRODUCTS, EQUIPMENT, MATERIALS



**LARGE SIZE
READOUT LAMPS**

MFR'S DESCRIPTION: *Rayescent* readout lamps are now available in a new large size.

USES: to display letters and numbers by electroluminescence in places such as stock quotation boards, time and temperature indicators, travel schedule panels, and various commercial, military and industrial applications.

SPECS/FEATURES: new lamp is made in the shape of a parallelogram, having outside rectangular dimensions of $3\frac{1}{16}$ " by $4\frac{3}{4}$ ". When mounted with other lamps, each lamp uses only $3\frac{3}{8}$ " of panel width. Peripheral measurements of the maximum size figure or number which can be displayed is $2\frac{1}{4}$ " by 4". The lamps can be read at distances up to 150', depending on ambient lighting conditions. The lamps operate at either 240 or 460 v. and at 60 or 400 cycles per second. The lamps use only 0.01 w. when all segments are lighted. The color of the light produced is a highly visible green. The lamps are made with a special composition gray glass which provides a contrasting background for the letters and numerals. The rated useful life of lamps is 5,000 hours, since their brightness decreases as they are operated. List price for lamps is \$25 or less.

AIA FILE NO. 31-F-29

MFR: WESTINGHOUSE ELECTRIC CORP.

Circle 204 for further information

FAST-ACTING FIRE DETECTION DEVICE

MFR'S DESCRIPTION: a super-sensitive, trouble-free fire detection thermostat, UL approved and listed by the California State Fire Marshal's office.

USES: all standard installations and "many hitherto considered difficult or impossible."

SPECS/FEATURES: known as *Thermotech Model 302*, the product is claimed to be faster acting and more reliable than many such devices now available. Hermetically sealed, explosion-proof and corrosion resistant, it can endure chemical and acid fumes,

dust, moisture and sub-zero temperatures as low as -40° , states mfr. Its sensitivity allows it to be installed on a 40' x 40' spacing, compared to 10' x 10' spacing for automatic sprinklers under UL listing.

AIA FILE NOS. 29-E, 31-i-31

MFR: TOMORROW, INC.

Circle 205 for further information

ELECTRONIC LIGHT & APPLIANCE SWITCH

MFR'S DESCRIPTION: an easily installed electronic light and appliance switch that permits a switch wherever desired.

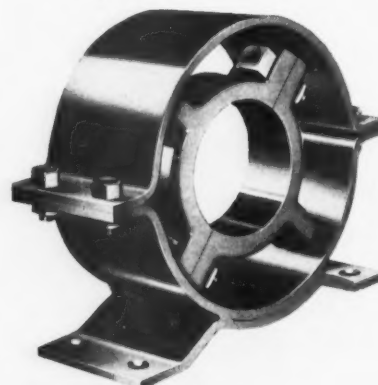
USES: residential, commercial, hospital, etc.

SPECS/FEATURES: switch control box is plugged into a wall plug, then the light or appliance is plugged into the control box. Next, a clear cellophane-like tape is applied on the wall wherever a switch is desired. This tape is connected to the control box. To operate the switch, it is only necessary to touch the tape with the finger, and the switch will turn on—touch the tape again, and it will turn the switch off. It is also available in a flush mount model primarily intended for new construction, and to replace the ordinary light switch.

AIA FILE NO. 31-C-71

MFR: GARDINER ELECTRONICS CO.

Circle 206 for further information



STEEL PIPE GUIDES AND SUPPORTS

MFR'S DESCRIPTION: a line of pipe alignment guides and roller pipe supports as an adjunct to mfr's expansion joint line.

USES: expansion joint applications.

SPECS/FEATURES: each pipe alignment guide consists of a cast steel segmented spider, sized to the OD of pipe from $\frac{3}{4}$ " to 24" nominal size, free to move axially in a segmented steel cylinder. The spider is clamped to the pipe, and the guiding cylinder is securely fixed to the supporting structure. The spider provides clear-

ance for complete insulation through the guide. Roller pipe supports are constructed entirely of steel. A formed steel spacer is provided for welding to the pipe; this spacer provides clearance for insulation, provides better support by increasing the bearing area, and relieves the pipe of direct contact with the steel roller. The units are available for pipe sizes $\frac{3}{4}$ " to 14", with larger sizes available on special order.

AIA FILE NO. 29-B-3

MFR: FLEXONICS CORP.

Circle 207 for further information

LATEX PAINT USED WITHOUT PRIMER

MFR'S DESCRIPTION: a formulation of latex paint which makes it possible to repaint without first applying a prime coat.

USES: exterior surfaces.

SPECS/FEATURES: called *Acrypolyrene House Paint*, the finish not only eliminates the need for oil or latex primers on previously painted surfaces, but also combines advantages superior to those previously associated with latex paints, according mfr. User benefits include: smooth, effortless application; better hiding power; less-than-an-hour drying time; uniform, tough finish that lasts longer, holds its color more years; successful application when surfaces are damp from dew or rain; quick cleanup with soap and water; no need for linseed oil or turpentine, states mfr.

AIA FILE NO. 25-B-25

MFR: LUMINALL PAINTS, DIV., NATIONAL CHEMICAL & MANUFACTURING CO.

Circle 208 for further information

DRAIN TILE RECEIVER

MFR'S DESCRIPTION: unit is reported to offer important advantages when used as a junction box for a tile field under a building by making it possible to clean the system when desirable and to insure dry and maintenance-free sub-elevations.

USES: drainage applications.

SPECS/FEATURES: unit exhausts to either storm or sewer, prevents clogging and inundation problems which occur to the sub-elevations or wall of the structure. It is reported to be ideally suited for installation at the intersection of each series of laterals and the main tile branch. The unit available with cast iron, bronze or nikaloy cover to fix it either rough or finished sub-elevation areas, has zero downstream pitch which enables the contractor to hold a minimum grade into his sump, catch basin or sewer only as required by the incline of the system, even though the structure may be of great length. Its design also insures access to maintain and hose down a tile field in case

there is a clogging in a lateral, branch or bleeders, without the expense of breaking up the floor walls. When finished off at the floor level, this drain tile receiver has the appearance and finish of all the other drains or cleanouts installed.

AIA FILE NO. 29-C-3

MFR: JOSAM MANUFACTURING CO.

Circle 209 for further information

POPULAR PRICED TERRAZZO POOL

MFR'S DESCRIPTION: a terrazzo-faced, fiberglass swimming pool at popular prices.

USES: residential, commercial and institutional applications.

SPECS/FEATURES: by resin-bonding of a terrazzo surface to its standard fiberglass panels, mfr claims to have produced a light, durable and extremely strong panel known as *Terrazzo-Crete*. The panels, according to mfr, have all the beauty and smoothness of a conventional terrazzo floor, and for the first time provide a pool wall impervious to cracks, pool water leaks and sub-surface pressures. Pool is reported to withstand all climatic conditions, retain its lustre without annual painting, prevent clinging of algae and other water-borne marine life, and fade-proof. It can be used as a skating rink in winter months.

AIA FILE NO. 35-F-2

MFR: SWIM QUEEN POOL CO.

Circle 210 for further information

HOSPITAL TYPE GRAB BARS

MFR'S DESCRIPTION: a functionally designed grab bar with a new gripping surface of 16 flat planes is offered.

USES: especially designed for the aged or handicapped or ill in therapy centers, rest centers and hospitals.

SPECS/FEATURES: the 16-sided grab bar handle with all edges slightly rounded, is made of red brass pipe. Brass flanges are bored to receive the bar ends and silver brazed to create a stable single unit. Finish is copper strike, hard nickel, then polished chrome plated. Satin finish optional. Available in 12", 16" and 24" vertical or horizontal types as well as right and left 45° bars, and right and left 90° horizontal and vertical grab bars.

AIA FILE NO. 29-i

MFR: LOGAN HOSPITAL EQUIPMENT CO.

Circle 211 for further information

GOLD FINISHED PORCELAIN ENAMEL

MFR'S DESCRIPTION: a process of finishing *Rigid-tex* metal with 22 K gold at low cost.

USES: decorative applications.

SPECS/FEATURES: the process consists of first enameling the metal with

How to end up with an insulated roof exactly the way you designed it

Specify Insulite Cant Strip and Tapered Edge Strip with Insulite Roof Insulation.

The full Insulite line of roofing products is designed to make it easy for the roofing contractor to do a complete job—and to do it quickly and at low cost.

- 1 The basic Insulite Roof Insulation is a tough, rugged product with the *extra* strength and rigidity to resist cracking, crushing and flexing.
- 2 Insulite Accessories—Cant Strip and Tapered Edge Strip—insure perfect joints where the roof meets a vertical surface, or where there is a building-up or tapering-off area. These accessories give a smooth, strong surface that will not break or puncture under hard construction or maintenance activities.

PROTECT YOURSELF FROM MAKE-DO EXPEDIENTS

Insulite Accessories make it easy for any contractor to follow your details. No sawed, beveled or built-up boards. Insulite Cant or Tapered Edge Strips are shaped to do a perfect job even in tough problem areas.

You get perfect construction and insulation where the roof meets a wall, chimney or other vertical surface; where the outer edges taper off; where you want drainage channeled.

BE SURE OF A ROOF THAT CAN TAKE IT

Insulite Roof Insulation is made of all-wood fibers from hardy, slow-growing Northern trees. It is not soft; it is not brittle. It has the high transverse and compressive strength needed to resist the hardest kind of wear.

Insulite Roof Insulation will give you a roof that stands up under loaded wheelbarrows, heavy LP gas cylinders, bitumen kettles, the heaviest equipment that might be used on it.

ACCESSORIES ARE OF COMPATIBLE MATERIAL

Insulite Tapered Edge Strip and Insulite Cant Strip are made from the same basic wood fibers as Insulite Roof Insulation. This eliminates any hazards caused by the introduction of two materials with conflicting properties.

Insulite Accessories have the same low coefficients of expansion; the same

vapor permeance characteristics; the same thermal resistance. Dimensional stability of Insulite Roof Insulation is excellent.

CHOICE OF DIMENSIONS AND TYPES

Insulite Roof Insulation comes in 24" x 48" and 23" x 47" sheets— $\frac{1}{2}$ ", 1", 1 $\frac{1}{2}$ " or 2" thick. Edges are square in the $\frac{1}{2}$ " thickness. In other sizes you may order either square or shiplapped edges.

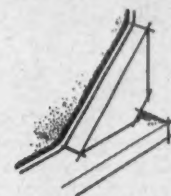
Insulite Cant Strips come in 4' lengths—either 3" x 3" or 4" x 4". Insulite Tapered Edge Strips are 4' long by 12" wide. They measure 1 $\frac{3}{8}$ " at the thick edge, and taper to $\frac{1}{4}$ " at thin edge.

Choose from two kinds of Insulite Roof Insulation: Ins-Lite, or asphalt-treated Graylite.

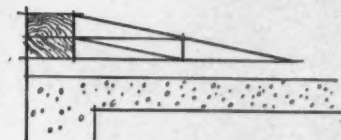
GET MORE FACTS AND NEW BOOKLET

Just call your Insulite representative for more information or send the coupon below directly to Insulite for the new Insulite Roof Insulation Manual.

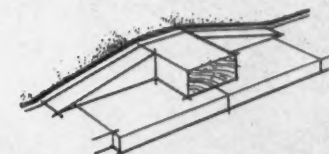
INSULITE ACCESSORIES MAKE IT EASY FOR YOU TO SOLVE SPECIAL PROBLEMS



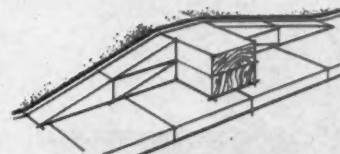
ELIMINATE 90° BEND IN ROOFING FELTS. Specify Insulite Cant Strips where roof meets chimney, wall or other vertical surface. A well-designed joint that protects felt from cracking, makes flashing easier, looks better.



CARRY FELT SMOOTHLY TO ROOF EDGE. Insulite Tapered Edge Strip makes roofs more perfect than ever before. It underlies felt layers, eliminates sharp angles where cracks often develop, carries roofing felt smoothly over edge nailing member.



CHANNEL DRAINAGE ANYWHERE ON A FLAT ROOF. Just position Insulite Tapered Edge Strips on either side of raised nailing base. Because every strip is precision-made to same size, perfect drainage curbs result.



BUILD UP TO HEIGHT YOU NEED. Insulite Tapered Edge Strips are the answer to this problem. Just have them laid as shown here. These strips are bevel-cut from Graylite Insulation Board.

SPECIFY

INSULITE®
Roof Insulation Products

INSULITE, made of hardy Northern wood

Insulite Division of Minnesota and Ontario Paper Company, Minneapolis, Minnesota

Please send me my copy of the new illustrated Insulite Roof Insulation Manual.

NAME _____

ADDRESS _____

CITY _____

ZONE _____ STATE _____

Circle 109 for further information →

PRODUCTS, EQUIPMENT, MATERIALS

Class A or AA porcelain enamel acid resistant finish. Over this goes a coating of gold, 5 micro-inches thick (approximately .0000005"). Since gold reflects 95 per cent of infrared rays, these sheets have a very high insulating value. It is pointed out that gold itself is not nearly as hard or scratch resistant as porcelain enamel, therefore, it can be scratched or damaged if abused. It is estimated that the cost of gold finished *Rigidex* metal will run considerably less

than gold leaf. There are more than 48 standard patterns in solid or perforated metal.

AIA FILE NO. 15-M-1

MFR: RIGIDIZED METALS CORP.

Circle 212 for further information

VISUAL CONTROL BOARD WITH FLEXIBLE FEATURE

MFR'S DESCRIPTION: *Memo Flex*, recently introduced visual control or schedule board, features simplicity, flexibility and ease of operation.

USES: commercial and industrial applications.

SPECS/FEATURES: unit comes complete with all elements, allowing user to make his own custom layout, using pressure-sensitive tape and letters to create column rule lines and column title headings. Fifty flexible plastic strips $\frac{3}{4}$ " wide by 31" long, are held in the board at the edges, slide up and down and snap in and out for easy rearrangement. Entries or notations are made directly on the plastic strips with a grease pencil and may be erased with a cloth or tissue.

AIA FILE NO. 35-H-4

MFR: MEMO FLEX DIV.

Circle 213 for further information

CONCRETE CONSTRUCTION



PRE-MOLDED JOINT SEALER FOR CONCRETE

MFR'S DESCRIPTION: *Sealfastic* is a pre-molded concrete joint sealer, waterproof, with 100 per cent expansion recovery up to one inch, according to mfr.

USES: tilt-up, lift-slab and curtain wall construction, swimming pools, reservoirs, regular and sawn high-way joints, etc.

SPECS/FEATURES: *Sealfastic* may be slipped into joints as thin as $\frac{1}{4}$ " sawn joints, straight or curved. There is no drip or spillage, so it may be placed exactly at any elevation in the joint. Product is reported to last indefinitely, but in case of damage, it may be replaced very quickly with only hand tools. It will not ignite and is fuel resistant. Product consists of one-inch bats of polyurethane foam, impregnated with a wide choice of types and colors of binders.

AIA FILE NO. 17-J

MFR: NATIONAL EXPANSION JOINT CO.

Circle 214 for further information

CURING/SEALING TREATMENT FOR CONCRETE FLOORS

MFR'S DESCRIPTION: *Radon 401* is a penetrating conditioner for both curing and later sealing of concrete floor surfaces.

USES: concrete floors and pavements. SPECS/FEATURES: according to mfr, the material should be applied as a liquid membrane curing treatment to newly placed concrete as soon as the latter is free of surface water and is sufficiently set to prevent marring under foot traffic. Under normal conditions, this is within 12 hours after finishing. In curing, the liquid can be

either sprayed or applied by a long-handled, soft-bristled floor sweep, lamb's wool applicator or roller. One gallon is said to treat 400 to 500 square feet of smoothly-troweled concrete. It is claimed that use of *Radon 401* retards moisture evaporation, so that more complete hydration of cement is obtained without use of water-ponding, sprinkling, building paper, straw or other loose cover materials. Second application is recommended within one month after curing. In this, *Radon* penetrates the surface, fills pores and binds small concrete particles together. It is reputed to prevent dusting and surface disintegration, improve floor appearance and reduce cleaning cost.

AIA FILE NO. 3-B-1

MFR: MAINTENANCE INC.

Circle 215 for further information

LIQUID ADMIXTURE FOR CONCRETE AND MORTAR

MFR'S DESCRIPTION: *Krete-X* with *Trulon*, an improved liquid admixture for concrete and mortar, introduced.

USES: designed to speed and improve the quality of cement work in all temperatures.

SPECS/FEATURES: product is reported to reduce the water ratio in concrete, induce high early strength, speed the set, improve workability and insure denser texture. Permits earlier finishing, and in cold climates, cuts down on the time required to protect fresh concrete from the damage of freezing. Product can be added to ready mixed concrete at the job site or at the mixing plant. When product is added to mortar, it is said to reduce the possibility of cracking and shrinking, increase strength and plasticity. Also, mortar tends to stick better, resulting in better tooling and finishing.

AIA FILE NO. 3-B-2

MFR: TRUSCON LABORATORIES

Circle 216 for further information

KITCHEN EQUIPMENT

FOLDING RANGE HOODS KEYS TO KITCHEN DECOR

MFR'S DESCRIPTION: *Fold-Away 6000* series of range hoods match kitchen colors and can be closed to become inconspicuous when not in use.

USES: kitchen installations.

SPECS/FEATURES: range hood can be opened during cooking period, and closed afterwards. When closed, all that shows is a narrow panel, flush with the wall cabinets, which can match walls, appliances, counters or cabinets. Mfr offers insert panels in clear or copper anodized aluminum as well as 11 colors. A plastic laminate insert can be used to match counter top, or a wood panel to match cabi-

HI-LO COOLERS
Trim wall hung models with convenient child-height bubbler, single cooler available, too, in varying capacities.



Specify the LEADERS in DESIGN and SERVICE

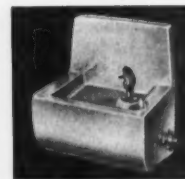


▲ "FLUSH-TO-WALL" COOLERS
HWF-Series coolers in many capacities; fit flush-to-wall to end cleaning cares;

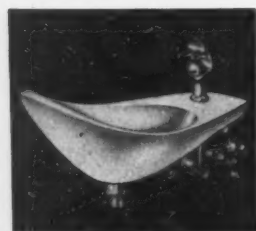
When you specify HAWS, you are sure of getting the best fountain or cooler for any particular location. For over 50 years, HAWS has set the pace with better materials, fine design and superior workmanship. Why settle for less? See the complete array of HAWS products in the detailed catalog—yours for the asking. Write today.



FIBERGLASS WALL FOUNTAIN
Model 71, available in choice of colors at no extra cost.



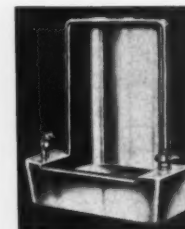
VITREOUS WALL MODEL ▲
Model 61, in smooth vitreous china, features tasteful Haws styling.



STYLE LEADER
Model 1505, a Haws "trend-maker" in vitreous china, with cast wall bracket.



ENAMELED IRON
Model 7X, a rugged classic design in acid resisting enameled iron.



RECESSED BEAUTY ▲
Model 73 fits in the wall, smoothly contoured in stainless steel.

Since 1909

HAWS

products of HAWS DRINKING FAUCET CO.
1441 FOURTH STREET • BERKELEY 10, CALIFORNIA

Circle 110 for further information

nets. Mfr's fans or blowers can be used with range hood. They may be ducted vertically or horizontally. Hood widths available are: 30", 36" and 42".

AIA FILE NO. 30-D-1

MFR: NUTONE, INC.

Circle 217 for further information

LINE OF QUIET FOOD WASTE DISPOSERS

MFR'S DESCRIPTION: food waste disposers with a polypropylene housing that is stated to keep kitchen noise level to a minimum.

USES: residential kitchens.

SPECS/FEATURES: the Super de Luxe model has 1/2 HP motor. Fiberglass insulation further reduces grinding noise. The *Deluxe* model features 1/4 HP. Both units have reversible cutting blades that double the life of the disposer between cutter overhaul. A shock-absorbent mounting gasket minimizes vibration transfer. A service key is included with both disposers for clearing jams without the need for a service call. An economy model is also included in the line.

AIA FILE NO. 29-H-61

MFR: YOUNGSTOWN KITCHEN DIV.,
AMERICAN STANDARD

Circle 218 for further information

STORAGE DRAWER FOR POT LIDS

MFR'S DESCRIPTION: all wood deep pot lid drawer has adjustable dividers.

USES: for kitchen storage of pot lids, platters, and other difficult-to-store round service utensils.

SPECS/FEATURES: drawer accommodates flat objects up to 9" in diameter. It is fitted with nylon roller bearings for ease of handling. Automatic stops prevent accidental spilling of contents. Available in 12 finishes on maple or oak.

AIA FILE NO. 35-C-13

MFR: WHITEHALL KITCHENS

Circle 219 for further information

HVAC

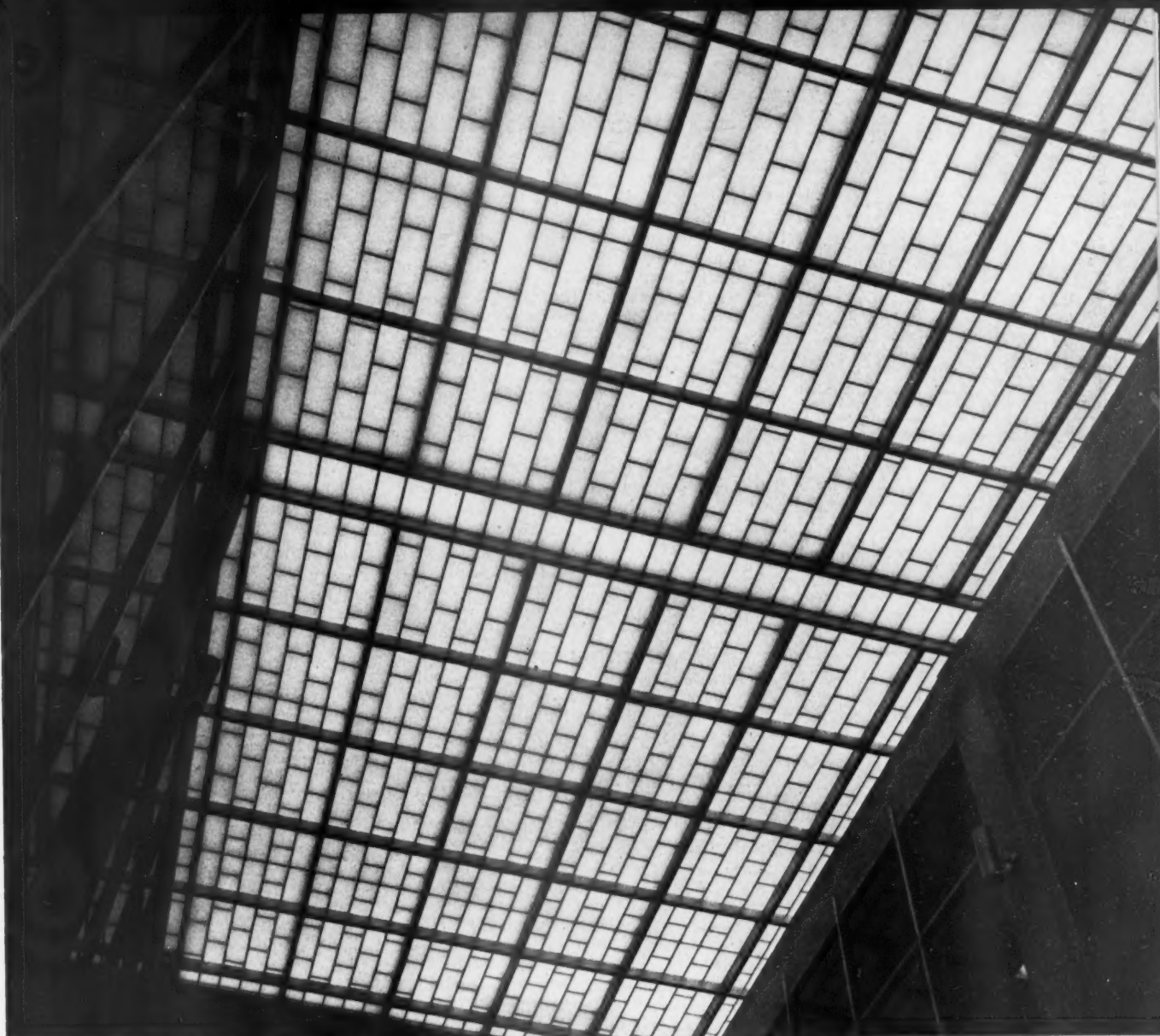
"ALL-IN-ONE"

HOT WATER SYSTEM

MFR'S DESCRIPTION: a one-package, all-purpose water heating system stated to save 30 per cent in space, 65 per cent in pool heater costs and eliminate excessive piping and venting by furnishing hot water for domestic use, hot water for Hydronics central heating, and pool water heating, all from a single packaged unit.

USES: apartment houses and hotels.

SPECS/FEATURES: the system is supplied with a full range of sizes of boilers up to 2,400,000 BTU/hr. and with hot water storage tanks ranging from 120 to 10,000 gallons. The basic equipment in the system includes a boiler, a hot-water storage tank, a copper immersion heater coil for the



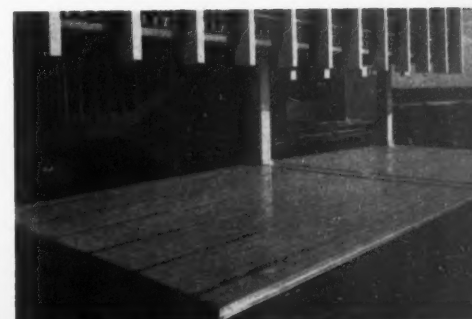
20' x 36' Kalwall Translucent Skyroof brightens lounge area at University of South Florida. Architects: Robert M. Little, FAIA and Associates; Guy C. Fulton, AIA. Contractors: W. H. Cooper Construction Co. Inc.

Casting new light (*daylight*) on interior design... Kalwall translucent Skyroofs

You can let soft, shadowless daylight into the deepest interior — with Kalwall Translucent Skyroofs. Kalwall transmits *diffused*, natural light without glare or "hot spots" — offers you these other advantages, as well:

Lightweight (1.5 lbs./sq ft) — *Structural strength* — *Shatterproof* — *Weather-tight* — *Easily Cleaned* — *Excellent Insulator* (best of any light-transmitting material). Available in Kalwall Skyroof panels, or in preassembled, ready-to-install skylight units. Variety of colors and patterns.

Write for details on this remarkable new basic building material.



Kalwall Skyroof is weather-tight, unobtrusive.

Circle 111 for further information →

KALWALL CORPORATION

Dept. C-31, 43 Union Street, Manchester, N. H.

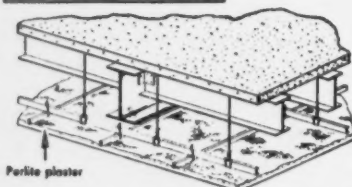
Lightweight!
Fireproofing!
Easy to handle!

... Perlite

Plaster Aggregate
is better 3 ways



Suspended Ceiling



Job mixed Perlite-gypsum plaster walls, partitions, columns and ceilings provide (1) fire-rated protection, (2) increased insulation and (3) adaptability.

Further, Perlite Plaster Aggregate reduces deadweight because its cellular structure cuts its weight to less than half that of ordinary plaster. It offers 3 to 4 times more resistance to heat transmission and provides up to 5 hour fire protection with minimum weight and thickness. Forms perfect bond for any type of plaster base—masonry, gypsum and metal lath.

Perlite requires $\frac{1}{3}$ less water and therefore is quicker drying, allowing earlier decoration and job completion. It can be economically applied by hand or machine.



For further information see the Perlite Institute Plaster Aggregate Catalog A.I.A. File No's 21-A-5 & 21-c-1 in Sweet's 1961 Architectural File or write for Catalog PI-6.

Information and data based upon independent research laboratory tests and ASTM specs.



Perlite
INSTITUTE INC.
International Association of Perlite Producers
45 W. 45TH ST., NEW YORK 36, NEW YORK

Circle 112 for further information

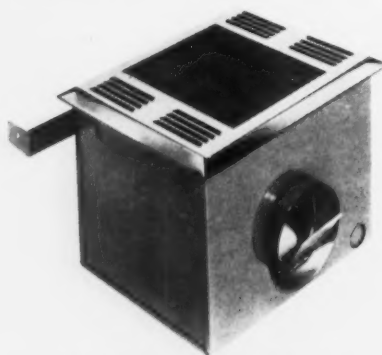
PRODUCTS, EQUIPMENT, MATERIALS

storage tank, a separate indirect swimming pool water heater, and accessories such as pumps, expansion tank and controls.

AIA FILE NO. 30-C

MFR: RAYPAK CO., INC.

Circle 220 for further information



HEATING/VENTILATING UNIT FOR BATHROOM USE

MFR'S DESCRIPTION: instantaneous heat and effective ventilation are combined in *Duo*, a bathroom ceiling unit.

USES: heating and ventilating bathrooms.

SPECS/FEATURES: the unit incorporates an electrically reversible axial flow fan which provides forced air for both the heating and ventilating cycles. Heating elements in the units, which produce both radiant and convection heat, reach peak efficiency of 4,950 Btu instantly. The unit features a flush mounted bright chrome grille. A honeycomb section of the grille has been engineered for draft-free forced air heating. A two-way switch is supplied with the unit and the housing is equipped with an adjustable bar for mounting between joists. Retail price is \$52.00.

AIA FILE NO. 30-D-1

MFR: TRADE WIND DIV., ROBBINS & MYERS, INC.

Circle 221 for further information

DUCTLESS STEEL HOODS

MFR'S DESCRIPTION: the *Nautilus* is an all-steel, kitchen range hood needing no vents, ducts, or outside louvers.

USES: residential kitchens.

SPECS/FEATURES: the *Nautilus* is stated to be easily installed in any kitchen, in any wall, with no wasted cabinet space. Equipped with a quiet-operating, 2-speed fan, it removes cooking odors, grease and smoke by means of an aluminum mesh and activated charcoal filters. The hood can recirculate the air in an average kitchen in ten minutes. It is available

in eight sizes and nine finishes, including stainless steel, *Satin Steel*, brushed antique copper, coppertone and four G.E. "Mix or Match" colors.

AIA FILE NO. 35-C-11

MFR: MAJOR INDUSTRIES, INC.

Circle 222 for further information

FIBREGLASS FAN HOUSINGS

MFR'S DESCRIPTION: maintenance-free, sealed-in color, roof-top exhaust fan housings.

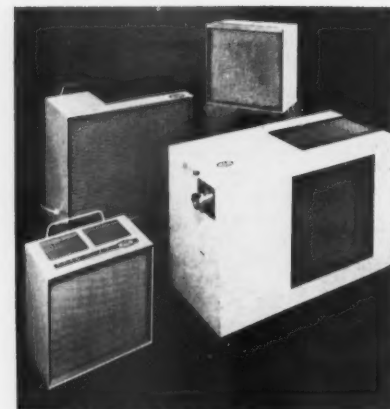
USES: with mfr's *Hyduty* fans, sizes 6PC through 56PC inclusive.

SPECS/FEATURES: fiberglass housings are available in six colors: dark blue, light blue, tangerine, buff, gray, and white. Housings are reported to withstand heat, cold, moisture and fumes and to be equal in strength to metal housings. Housings also act as sound deadeners.

AIA FILE NO. 30-D-1

MFR: DAVIDSON FAN CO.

Circle 223 for further information



AIR CIRCULATORS FOR HOSPITAL USE

MFR'S DESCRIPTION: four air circulators of varying capacities trap and kill airborne germs and odors.

USES: hospitals and institutions.

SPECS/FEATURES: the filters are equipped with triple filters which kill more than 99 per cent of the germs trapped. Each of the models has an air handling capacity large enough to "turn over" the volume of air in the recommended room size once every seven to ten minutes. Model *FAC 200A* is recommended for rooms 12' x 14' x 8'. It has a two-speed switch which gives it an air handling capacity of 200 or 125 CFM, depending upon conditions. Suggested retail price is \$69.95. Model *FAC 350* has an air handling capacity of 350 CFM and is recommended for rooms 18' x 20' x 8'. It is a large machine best used in area where airborne germ counts are critical due to infected

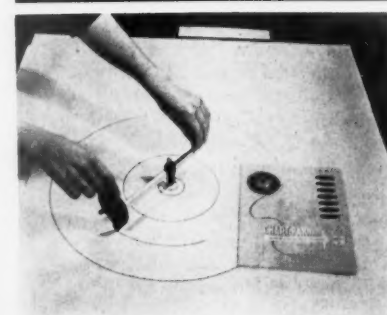
patients. Suggested retail price is \$119.95. The *FAC 350* (explosion-proof) model is recommended for areas requiring explosion-proof equipment. Its price to hospitals is \$750. Model *FAC 125* is recommended for rooms 10' x 10' x 8' and retails at \$49.95. All units are portable except the explosion-proof machine, which is equipped with rollers.

AIA FILE NO. 30-D-3

MFR: FRAM AIRE CORP.

Circle 224 for further information

OFFICE AIDS



BEAM COMPASS TAPE PEN

MFR'S DESCRIPTION: a beam compass holder designed for use with mfr's *Tape-Pen*, has been introduced.

USES: in drafting to draw precise circles and arcs with mfr's narrow width *Curve-Line* tapes.

SPECS/FEATURES: compass holder is made of aluminum and is adjustable for making circles of various sizes, from a 1" to a 9" radius. The instrument allows tape to be rolled on easily in a line either freehand or following a guide. Basic unit lists from \$9.50. If longer radii are desired, additional standard length beam sections may be coupled to the basic beam. Extra sections (9 $\frac{3}{4}$ " each) with screws list at \$2.00 each.

AIA FILE NO. 35-H-3

MFR: CHART-PAK, INC.

Circle 225 for further information

DRAWING BOARD SURFACE MATERIAL

MFR'S DESCRIPTION: a drawing board surface material that provides an "excellent" working cushion and a unique self-repairing feature.

USES: drafting tables, etc.

SPECS/FEATURES: trade-named *Paramount*, the material consists of a layer of *Mylar* laminated to a layer of green vinyl plastic. The *Mylar* provides strength, dimensional stability and freedom from buckling under all weather conditions. The pastel green color of the vinyl is restful to the eyes because it reduces reflected glare and shows up linework better, mfr states. Backed with adhesive, *Paramount's* surface remains flat, eliminating the tendency of existing cov-

erings to creep, wrinkle or stretch. In addition, it provides a balanced foundation for drawing or tracing paper. The surface keeps instruments from sliding, at the same time "healing" itself of the impressions of pencil lines, grooves and compass holes. It can be cleaned easily with a mild cleanser.

AIA FILE NO. 24-B

MFR: KEUFFEL & ESSER CO.

Circle 226 for further information

VERSATILE ERASABLE INTERMEDIATE PAPER

MFR'S DESCRIPTION: a diazo sensitized erasable sepia intermediate paper 402 IZE is offered.

USES: reproduction of prints where additions and corrections must be made.

SPECS/FEATURES: product reported to offer time and cost savings advantages in reprinting where additions or deletions of information have to be made. Pencil, ink, and typewritten entries can be removed by ordinary eraser or scraping with blade or knife. Base paper is highly transparent for fast reprint speed and has excellent show-through for drawing purposes, it is stated. Product can be exposed in any dry diazo whiteprint machine. Development usually takes one pass when machine is run at its normal speed.

AIA FILE NO. 35-H-31

MFR: OZALID DIV., GENERAL ANILINE & FILM CORP.

Circle 227 for further information

SINGLE SHEET HANGER FOR VERTICAL FILING

MFR'S DESCRIPTION: single sheet hanger made of heavy duty press board has self-adhesive strip already applied.

USES: for vertical filing of blue prints, maps, plans, tracings, etc.

SPECS/FEATURES: hangers, available in 18" and 36" sizes, are notched to fit mfr's single sheet rack. Hangers can be cut to any lesser length with ordinary scissors. A new adjustable rack is also available that will accommodate 150 hangers of any length up to 36". Pre-drilled holes in hangers permit fastening of groups of hangers with ordinary 1/4" paper fasteners. Tracings and vellums can be reproduced with sheet hanger attached. Several racks and cabinets are available for suspending hangers. The 18" hangers retail at \$1.75 per dozen.

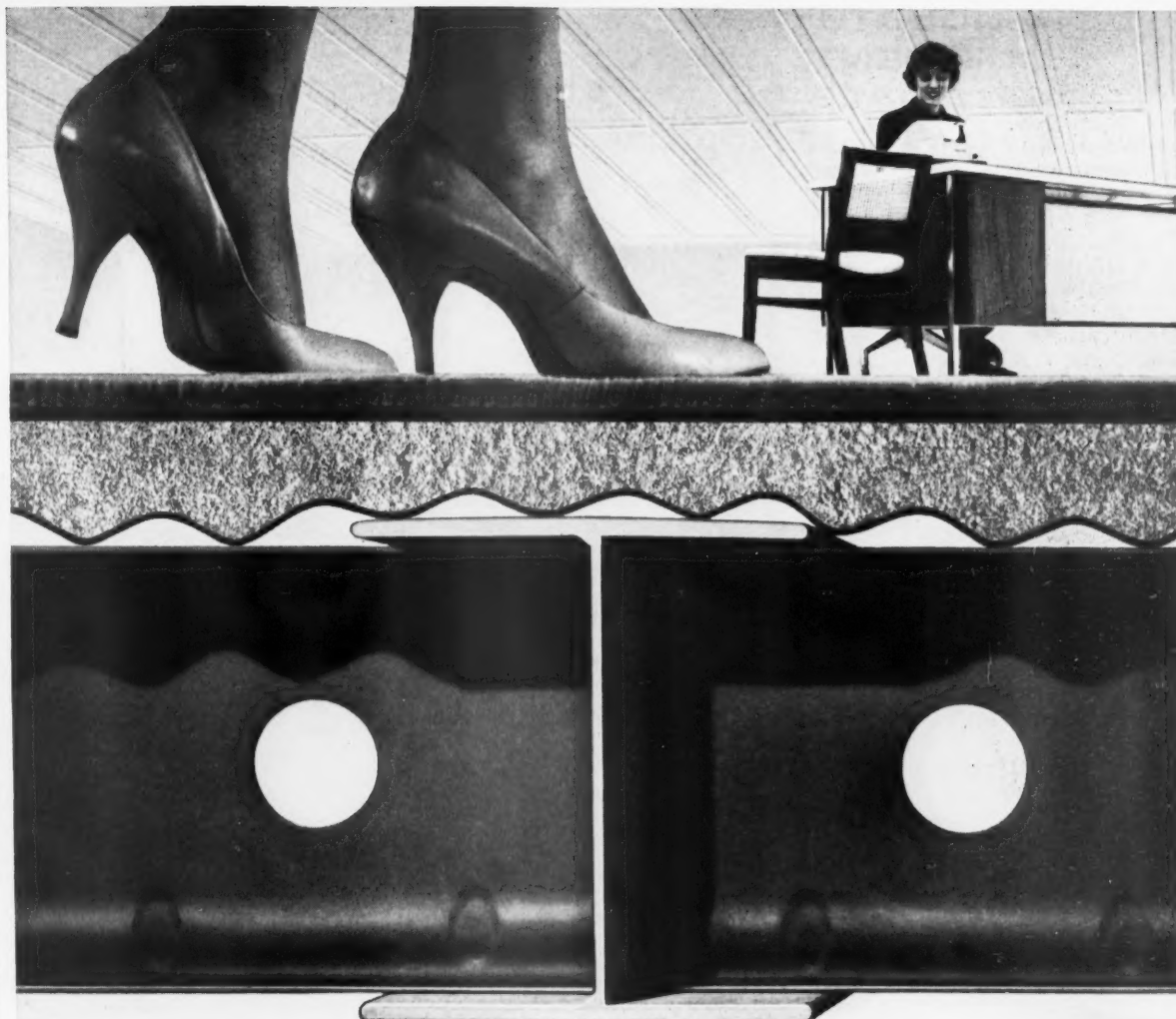
AIA FILE NO. 35-H-42

MFR: PLAN HOLD CORP.

Circle 228 for further information

SYSTEMS PAPER FOR BLACK-ON-WHITE COPIES

MFR'S DESCRIPTION: copy papers that will make black-on-white permanent

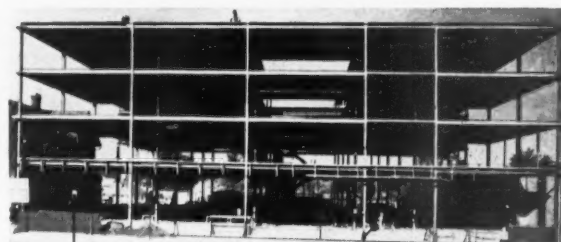


Modern lightweight floor system trims building costs

The sheer simplicity of good design makes Stran-Steel's complete and completely modern floor and roof system first choice of cost-conscious architects. Completely compatible joists, wide-flange beams and decking reduce coping, cutting and detailed drawing. Collaterals are easily and quickly attached because this light steel system is *naillable*. Joists are so light cranes are seldom needed. Thinner but stronger floors reduce building height appreciably. High strength-to-weight ratio cuts foundation costs. You save time, materials and money.

For details, mail the coupon or call the dealer near you. He's listed in the Yellow Pages under STEEL.

See 1961 Sweets Catalog Service, Industrial Construction, File No. 2a/Str.



STRAN-STEEL lightweight floor and roof system trimmed costs in this modern 4-story office building in Bethesda, Md.



STRAN-STEEL CORPORATION, DEPT. AEN-7, DETROIT 29, MICHIGAN

Please send more information on the uses of Stran-Steel architectural systems.

Name _____ Title _____
Firm _____ Phone _____
Address _____
City _____ Zone _____ State _____

STRAN-STEEL IS A DIVISION OF NATIONAL STEEL CORPORATION

Circle 113 for further information

PRODUCTS, EQUIPMENT, MATERIALS

reproductions in any *Thermo-Fax* copying machine at a cost of less than 2¢ per copy.

USES: error-free multiple copies of 8½" x 11" document, letters and other information.

SPECS/FEATURES: the new process consists of two papers—type *A Pink Systems* paper and type *B White Systems* paper. They are intended to eliminate the need for carbon copying of letters, order forms, inter-office memos, reports and similar internally originated documents. Mfr states the new method requires no inks, stencils or special equipment.

AIA FILE NO. 35-H-31

MFR: MINNESOTA MINING AND MANUFACTURING CO.

Circle 229 for further information

WALLS/DOORS/FLOORS

PLYWOOD SUBFLOOR AND UNDERLAYMENT

MFR'S DESCRIPTION: a premium grade of 2-4-1 plywood combination subfloor and underlayment with extra-thick veneers and moisture-resistant glue lines.

USES: subflooring.

SPECS/FEATURES: the 2-4-1 type of panel is reported to sharply cut construction time, eliminate the need for underlayment beneath tile, linoleum, hardwood and carpeting, and allow for the use of floor beams on four foot centers without cross-bracing in lieu of normal joists. The grade has, in addition, a glue line that allows storage outside for a full year without mold damage. The sanded 4' x 8' panels, 1½" thick, are tongue and grooved on the 8' sides and are completely edge sealed. Manufacture is hot-press.

AIA FILE NO. 19-E-93

MFR: GEORGIA-PACIFIC CORP.

Circle 230 for further information

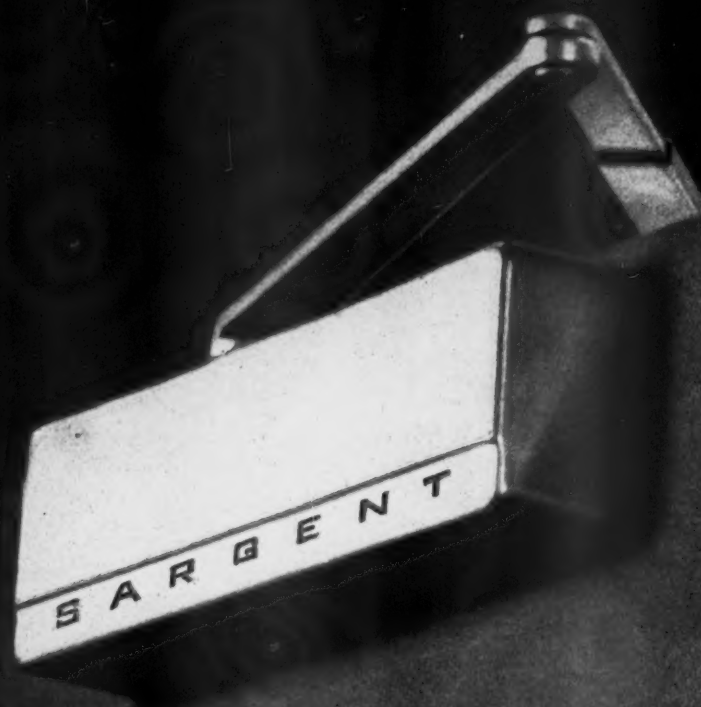
SCATTER MOSAIC COLORED HARDBOARD

MFR'S DESCRIPTION: *Sandalite* is a hardboard panel with a decorative scatter mosaic design in three shades of color.

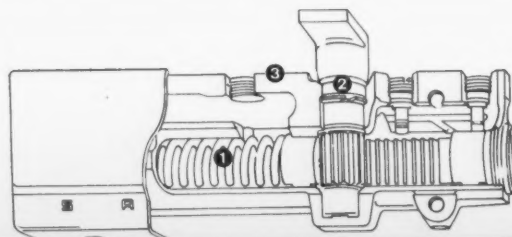
USES: interior applications such as wall paneling, wainscoting, partitions, counters, ceilings, bathroom walls, cabinets, sliding doors, novelty furniture, table tops, display fixtures, room dividers, and many other residential, commercial and industrial uses.

SPECS/FEATURES: *Sandalite* has a factory-sealed face to produce a stain

Circle 114 for further information →



The only all new line of surface and concealed door closers. Size for size, Sargent's Powerglide Line does a bigger job better.* Meets or exceeds the U.S. Federal performance specifications for conventional



*SARGENT POWERGLIDE LINE EXCLUSIVES

- ① heaviest spring in a rectangular closer . . . works under less stress in longer chamber.
- ② bearing seats machined directly in closer body . . . assures perfect alignment of needle bearings.
- ③ extra thick iron case—and heavy-duty spindle . . . provide added strength, longer life.
- ④ two springs and double chamber for greater checking capacity on larger sizes.

PRODUCTS, EQUIPMENT, MATERIALS

and abrasion resistant surface. It is a grainless wood product which is easily worked and fabricated with ordinary hand woodworking tools or power equipment. The product can be used without further finishing, but if desired, wax finishes, or clear varnish, lacquer, or plastic finishes may be applied. It is available in plain panels of $\frac{1}{8}$ ", $\frac{3}{16}$ ", and $\frac{1}{4}$ " thicknesses, and in sizes 4' wide up to 16' in length. It is also available in *Forall* (*Sandalite* faces laminated to a hardboard core) in $\frac{1}{2}$ " and $\frac{3}{4}$ " thicknesses in 4' x 8' sizes; random plank with a V groove in 4' x 8' panels $\frac{1}{4}$ " thick; and in tongue and groove panels 16" wide by 96" long in either a regular face or with random grooves.

AIA FILE NO. 23-L

MFR: FOREST FIBER PRODUCTS CO.

Circle 231 for further information

ADDITION TO LINE OF FOLDING DOORS

MFR'S DESCRIPTION: *Tropix-Fold* is a full-grain Philippine mahogany door with nylon-reinforced vinyl weaving.

USES: residential and commercial applications.

SPECS/FEATURES: mfr reports that the door moves effortlessly on nylon glides and won't creep when door is in closed position. Matching *Latch-O-Matic* handle has thumb-button locking device for positive security. Panel caps insure even folding. Installed in minutes, doors are designed to fit any opening up to 8' x 8' with a single door, and up to 16' x 8' with double doors. Available in natural, pearl white or sand beige. Retail price: \$19.88 for 32" x 80" door.

AIA FILE NO. 16-M

MFR: CLOPAY CORP.

Circle 232 for further information

VINYL-SURFACED GYPSUM WALLBOARD

MFR'S DESCRIPTION: *Eternawall* is a decorative, new vinyl-surfaced gypsum wallboard.

USES: walls and partitioning in commercial and residential applications.

SPECS/FEATURES: the vinyl-surfaced wall material has a slightly textured, linen weave in pastel colors of snow drift white, shadow gray, seafoam blue, spring green, sunset pink and sand tan. Surface is washable and grease, crayon and oil stains can be removed with a damp cloth. Product is $\frac{3}{8}$ " thick.

AIA FILE NO. 20-B-21

MFR: BESTWALL GYPSUM CO.

Circle 233 for further information

type. For all applications, all door sizes...exterior and interior. Call your Sargent supplier or write Sargent & Company, New Haven 9, Conn. In Canada: Sargent of Canada Ltd., Box 328, Petersborough, Ontario.



SARGENT

The newest fashion in a complete line of architectural hardware

← Circle 114 for further information

NEW WINDOW FOR ARCHITECTS!

...from
DeVAC



Thermo-Barrier*
insulates
frame, solving
problems of
condensation



* Patent pending

Combined Prime and Self-Storing Anodized Aluminum Window Joined in a Uniquely Designed Insulated Frame

THERMO-BARRIER*—High impact dry vinyl surrounds entire window and securely interlocks the frame of the prime unit with the frame of the combination storm unit, insulating against cold or heat transfer, providing added protection against condensation within the critical humidity range. Write for technical report on test results.

INSIDE—Condensation or buildup of frost is eliminated except under extreme conditions of humidity. Damage to drapes or to decorating is avoided and anodized aluminum gives permanent beauty.

OUTSIDE—Self-storing combination storm and screen unit adds convenience. T-6 temper gives extra strength to the anodized aluminum which allows trim design and neat appearance on light commercial buildings and all style homes.

TWO MORE DeVAC QUALITY PRODUCTS



Inside Replacement Windows—Manufactured to the exact size of each window to be replaced, these aluminum windows renew the appearance, install quickly and solve the problem of excessive maintenance or inoperability of existing windows.



Glasswalls—Floor-to-ceiling three-light window units with adjustable panels are ideal for walls, picture windows, breezeways, porches,



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DeVAC

5900 Wayzata Boulevard Minneapolis 16, Minn.

Circle 115 for further information

26

PRODUCTS, EQUIPMENT, MATERIALS

FURNITURE

CONTOURED PLASTIC CHAIRS FOR STADIUMS & AUDITORIUMS

MFR'S DESCRIPTION: contoured individual tilt-up plastic chairs for stadium and auditorium seating.

USES: stadiums, gymnasiums, auditoriums, convention halls, race tracks, schools, etc.

SPECS/FEATURES: according to mfr, the *Contours* are available at less cost than traditional spectator seating. Molded or rigid one-piece fiberglass-and-nylon plastic, the chairs are available with or without arms and in a variety of decorator hues. Tilt-up feature instantly creates wider aisles for rapid and pleasant passage. Three-quarters of a foot is added to the aisle when chairs are placed in the tilt-up position. Only slight pressure from the spectator's leg is required to lift the seat. *Contours* are available for attachments either to stadium risers or to interior floors.

AIA FILE NO. 28-A-5

MFR: PACIFIC SEATING CORP.

Circle 234 for further information

MULTI-PURPOSE SCIENCE TABLE

MFR'S DESCRIPTION: the *Clearview* science table is designed to emphasize individual activities by students, yet is equally effective for group activities.

USES: chemistry, physics, biology and general science laboratories.

SPECS/FEATURES: space arrangement is engineered for student safety with a minimum of class distraction. No student directly faces another. The table provides individual and comfortable laboratory work space for experiments, reference work and note taking. Storage space and complete service facilities are provided for each student. Pedestal-mounted tables without storage cabinets are also available.

AIA FILE NO. 35-E

MFR: LABORATORY FURNITURE CO., INC.

Circle 235 for further information

HARDWARE

CLOSET TRACK WITH SLIDING RECEPTACLES

MFR'S DESCRIPTION: a line of closet hardware, complete with track and sliding receptacles, has been announced.

USES: clothes closets and wardrobes—particularly suited to public checkrooms, hotels and motels.

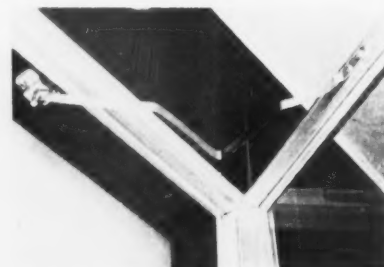
SPECS/FEATURES: system consists of an extruded aluminum under-shelf track, which holds sliding receptacles that hold all types of garment hangers (both standard and the various

theft-proof designs). Mfr states system is inexpensive and installed in a matter of minutes.

AIA FILE NO. 27-A

MFR: VOGEL-PETERSON CO.

Circle 236 for further information



STAINLESS STEEL DOOR PROTECTOR

MFR'S DESCRIPTION: a single stainless steel strip, replacing the standard chain device, which protects storm or screen doors from opening too wide or slamming against the house or wall.

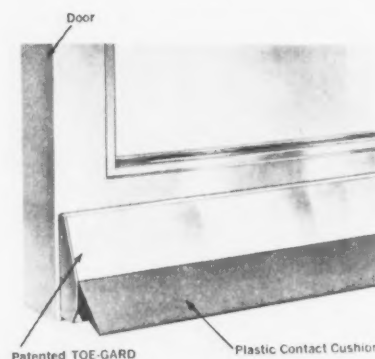
USES: stainless, aluminum or wood screen or storm doors.

SPECS/FEATURES: reported to be noiseless in operation, the inexpensive unit remains constant during opening and closing. The strip is formed at three points and rolled at the edges. Simple design of the item defies any rusting and remains clean in appearance since there is no area to collect dirt and grime. Design allows installation at the top of the door, out of the way. Only four screws are required.

AIA FILE NO. 27-B

MFR: STAINLESS AND STRIP DIV., JONES & LAUGHLIN STEEL CORP.

Circle 237 for further information



Patented TOE-GUARD

Plastic Contact Cushion

ACCIDENT GUARD FOR AUTOMATIC DOORS

MFR'S DESCRIPTION: *Toe-Guard* is applied along the full width of the bottom rail of automatically operated doors to provide safe, effective protection against toe and foot injuries caused by public carelessness.

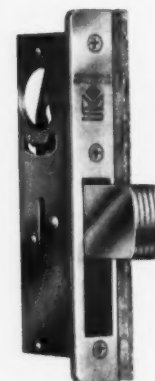
USES: metal, tempered glass or wood doors equipped with mfr's *Invisible Dor-Man* door operator. It can be adapted to some other types of automatic operator.

SPECS/FEATURES: when the *Toe-Guard* plastic contact cushion touches a person or object in the door's path, power operation of the door is automatically stopped. The door backs away a short distance from the obstruction. Then the door resumes the opening cycle, stopping again if the obstruction remains. This safety action continues until obstruction is cleared from the door. Opening cycle is then automatically resumed.

AIA FILE NO. 27-B

MFR: DOR-O-MATIC DIV., REPUBLIC INDUSTRIES, INC.

Circle 238 for further information



LOCK WITH COMPLETE WEATHERSTRIPPING

MFR'S DESCRIPTION: model MS 1851 *AW Maximum Security* lock has weatherstripping permanently affixed along the outside edge of its faceplate.

USES: designed specifically for narrow-stile swinging glass doors.

SPECS/FEATURES: deep pile *Schlegel* stripping runs the full length of the lock face, covering the entire lock, including that section from which the bolt projects. Lock utilizes an exclusive pivoted bolt which is housed vertically when retracted and swings upward into its horizontal locked position. This swinging bolt action allows a much longer bolt than usual. A 1 3/8" length of the bolt's full 3" measurement projects into the opposite door or jamb, for greater protection against forced entry.

AIA FILE NO. 35-P-6

MFR: ADAMS RITE MANUFACTURING CO.

Circle 239 for further information

ACOUSTICAL CONTROL

REVERBERATION SYSTEM FOR ACOUSTICAL CONTROL

MFR'S DESCRIPTION: the *Westrex 1400 Distributed Reverberation System* is

an electronic device that provides custom-made acoustics.

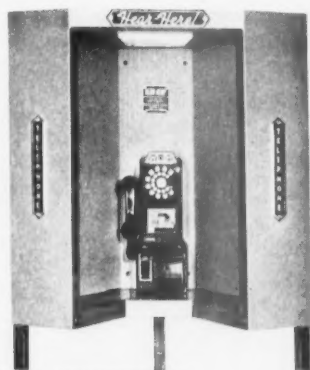
USES: old and new auditoriums, halls, churches, amphitheatres and homes.

SPECS/FEATURES: the system is reported to provide optimal acoustics in halls in which the natural reverberation time has been established primarily for voice sounds, and thus is too short for satisfactory reproduction of music. The system creates for each sound a complex train of repetitions of that sound in continuously diminishing volume and from various parts of the auditorium. The sounds are repeated by recording them on magnetic tape and passing the tape over a succession of reproducing heads. Frequency of repetition is determined by tape speed and head spacing and can be adjusted to the requirements of the particular hall. The loudness of each successive repetition can also be controlled. Three groups of equipment are included in the basic system—the tape transport, including erase, record and reproduce heads; the distributed reverberation assembly, including recording and reproducing circuits, and an amplifier cabinet containing 60 W amplifiers for each speaker. Microphones and speakers are optional to allow the user to utilize present equipment.

AIA FILE NO. 31-i-7

MFR: LITTON INDUSTRIES, INC.

Circle 240 for further information



OPEN ACOUSTICAL TELEPHONE BOOTH

MFR'S DESCRIPTION: special acoustical treatment of inside wall and ceiling panels of No. 45 Acousti-Booth make it most acoustically efficient member of mfr's line of open acoustical telephone booths.

USES: open booth applications in areas of high noise levels such as factories, transportation terminals and lobbies of public buildings.

SPECS/FEATURES: mfr states that acoustical treatment assures that telephone conversations are private and undisturbed by noise. Open construction of booth permits free circu-

Circle 116 for further information →

IF YOU FASTEN TO, DRILL, OR CUT CONCRETE and STEEL...



CAN DO THE JOB FASTER, EASIER AT MINIMUM COST

Whether you fasten to concrete or steel, drill or saw concrete or masonry, there's an OMARK tool made to help you do the job quicker, easier and at less cost.

Service, parts, supplies and repairs available nationwide through factory-trained personnel. Check your needs below and contact your OMARK dealer for details, demonstrations.

DRIVE-IT POWDER ACTUATED TOOLS

OMARK DRIVE-IT tools use cartridges to drive hardened steel drivepins directly into concrete or steel... no drilling, power lines, or plugs. Fastenings withstand thousands of pounds pullout force. Simple and safe to operate. Used by electricians, general contractors, heating, ventilating men, acoustic contractors and other building tradesmen.

OMARK-GRAMWELD STUD WELDING SYSTEM

For permanent installation of insulation to metal buildings, sheet metal ductwork, tanks, boilers use the OMARK-GRAMWELD stud welding system. Easy, simple to use. Needs only 115 volt power line. Welds pointed pins to many types of metal, without burn-through or distortion, for attaching insulating material. No flux, ferrules or special material preparation needed.

OMARK DIAMOND DRILLING, SAWING TOOLS

You can bore through concrete, brick, tile and masonry easily with an OMARK diamond drilling machine. Operates at any angle, drills holes from 1/4" to 18" in diameter. For sawing concrete slabs, choose one of four models of gasoline engine OMARK concrete cutters. Cut up to 12 ft. per minute. For sawing tiles, bricks, concrete blocks use an OMARK Diamond masonry saw. Zip through the largest block in one pass.

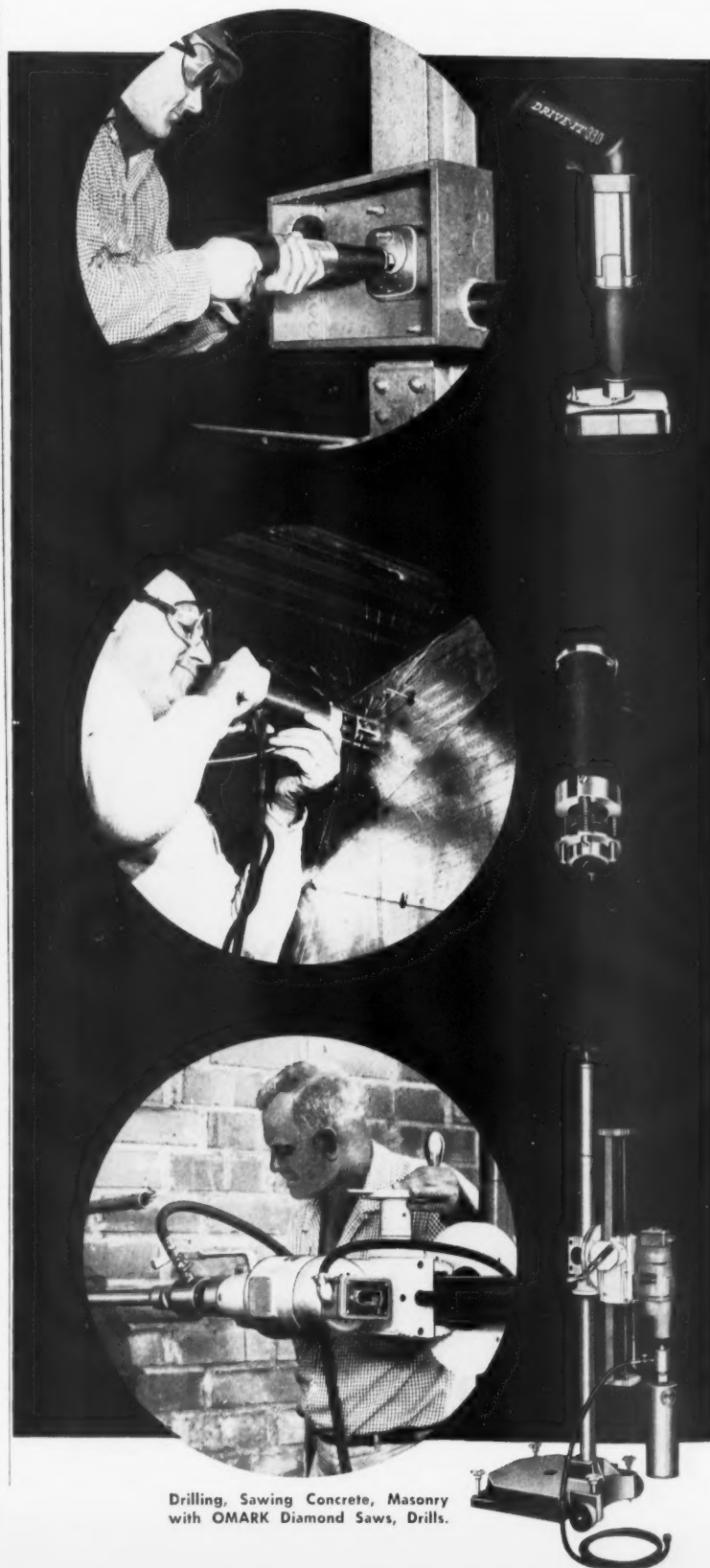
Remember, for concrete and steel fastening, drilling, sawing equipment, consult your OMARK dealer for high quality tools, dependable service.

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Drilling, Sawing Concrete, Masonry
with OMARK Diamond Saws, Drills.

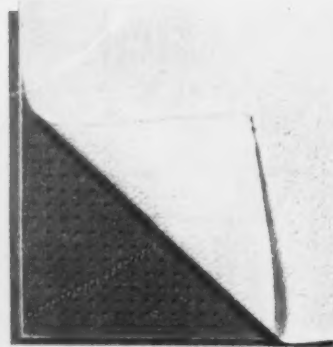
PRODUCTS, EQUIPMENT, MATERIALS

lation of air and facilitates floor cleaning operations. Of welded steel with silver-gray hammered finish, the booth is without doors or moving parts. Can be cleaned with damp cloth. Booth may be installed either free-standing on steel legs or wall mounted with special brackets.

AIA FILE NO. 39-C

MFR: BURGESS-MANNING CO.

Circle 241 for further information



ACOUSTICAL CEILING TILE WITH PLASTIC FACING

MFR'S DESCRIPTION: a type of plastic-faced acoustical ceiling tile that is said to be washable and resistant to soil and grease stains.

USES: kitchen and other applications where smoke from a stove or grease present a problem.

SPECS/FEATURES: Vinyl-coustic has an average noise reduction coefficient for the 250-to-2000 cycles-per-second range (middle) of 65. A thin film of plastic conceals the noise-muffling perforations and can be washed with a damp cloth or sponge. Three patterns are available: *Tapestry* (embossed white), *Premier* (heavily embossed white), and *Sandalwood* (which is embossed and printed in neutral shades to blend with any decor). The tiles can be applied in the fashion of standard fiberboard tiles; either cemented directly to an old ceiling or nailed or stapled in place. They have interlocking tongue-in-groove edges which assure tight fitting at all joints and can be sawed to fit around light fixtures or along edges of a ceiling, mfr states.

AIA FILE NO. 39-B

MFR: BARRETT DIV., ALLIED CHEMICAL CORP.

Circle 242 for further information

ACOUSTICAL PLASTER FOR CEILING APPLICATION

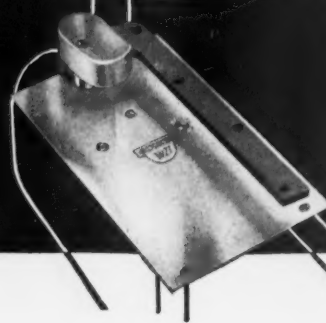
MFR'S DESCRIPTION: Mute acoustical plaster combines the best qualities of

a NEW design in floor hinge door control

RIXSON®

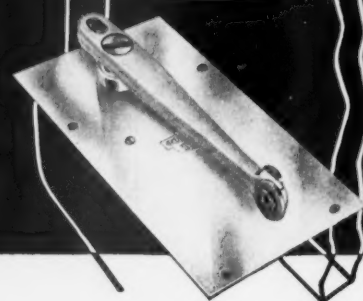
no. 27

ALL controls built-in
OFFSET HUNG
¾" or 1½"
single acting



no. 28

ALL controls built-in
CENTER HUNG
single acting



for entrance, vestibule and heavy interior doors

Every door control... door closer, positive dead stop, hold-open plus complete control over both opening and closing action... all built-in and all invisible; no unsightly arms or mechanisms to be tampered with or to create stumbling hazards.

For the first time, a floor type door closer that offers all these adjustment possibilities, after installation. Easily accessible adjustments at the floor make it pos-

sible to adjust for EXACTING variations from slow to fast closing, from gentle to firm latch pressure, from very light to very firm back-check resistance... yes, even the hold-open can be changed whenever you wish from automatic hold-open to non-hold-open or vice versa simply by turning a set-screw in the floor plate. The No. 27 and No. 28 offer a veritable control-panel for optional local adjustment of door opening and closing action.

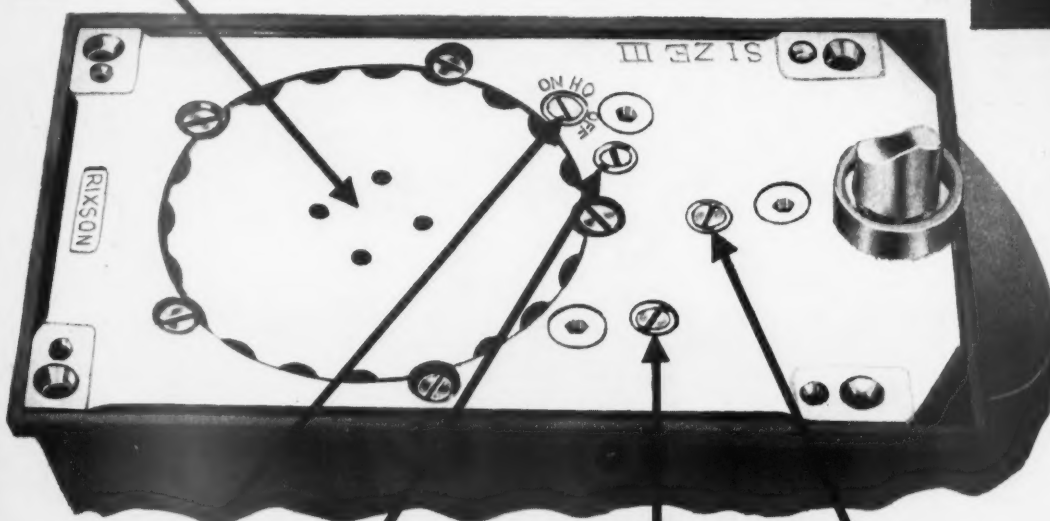
mechanism entirely new on nos. 27 and 28 series but easily interchangeable with RIXSON nos. 25 and 26 and closers of similar design and size.

Circle 117 for further information

for the first time . . .

FULL ADJUSTMENT CONTROL PANEL at the floor

spring tension adjustment
for unusual wind and draft
conditions.



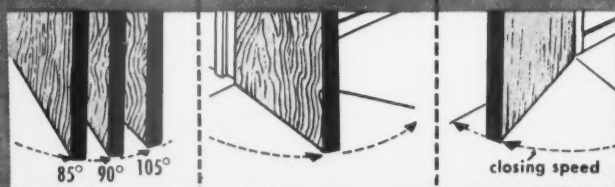
"On-Off" hold-open selector
screw for setting at either
automatic hold-open or non-
hold-open.

screw adjustment for
changing back-check
pressure from very light
to very firm.

screw for adjusting
closing speed of door
from open to 15°.

screw for adjusting
latching speed of
door from 15° to fully
closed.

complete, EXACT adjustment of every control



positive dead stop

A positive door stop
is built in to stop the
door at choice of any
one of three factory-
set positions—85°,
90° or 105°—speci-
fied when the closer
is ordered.

hydraulic back-check

A hydraulic resistance
slows the door's opening
action during the final
half of the opening
swing. This back-check is
always easily adjustable
to vary from light to firm.

2 closing speeds —independently adjustable

The closing speed
from open to ap-
proximately 15° can
be varied by one ad-
justment and the
latch speed from 15°
to closed position by
another.

3 HOLD-OPEN OPTIONS

a. NON-HOLD-OPEN

When specified, furnished without hold-open. Door
stops at choice of three factory-set positions: 85°,
90° or 105°.

b. AUTOMATIC HOLD-OPEN

When specified, furnished with automatic hold-open.
Door stops and holds automatically at choice of
three factory-set positions: 85°, 90° or 105°.

c. SELECTOR (on-off) HOLD-OPEN

When specified, furnished with on-off selector screw.
When the selector screw is turned to "ON", the door
stops and holds automatically at choice of three fac-
tory-set positions: 85°, 90° or 105°. When the selec-
tor screw is turned "OFF", the door stops at the
specified factory-set position and the hold-open
does not function.

fill in and mail coupon TODAY

THE OSCAR C. RIXSON COMPANY

9100 west belmont ave. • franklin park, ill.

CANADIAN PLANT: 43 Racine Rd. (Rexdale P. O.) Toronto

Please send complete details on Nos. 27 and 28

Name _____ Title _____
Company _____
Address _____
City _____ Zone _____ State _____

Circle 117 for further information

PRODUCTS, EQUIPMENT, MATERIALS

NEW

RIXSON

lime based acoustical materials with
automatic pore-producing properties
of foamed materials.

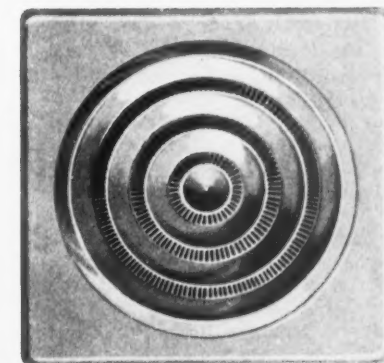
USES: for use on ceiling and other
surfaces not subject to extreme wear.
SPECS/FEATURES: recent laboratory
tests indicate that product combines
good light reflectance with sound ab-
sorption. When applied ½" thick over
a standard base coat with a darbid,
unperforated, unpainted surface,
product produces an average noise
reduction coefficient of .60. Noise re-
duction increases still further with
stippling and perforating. When
darbid, unpunched and unstippled,
pure white Mute has a light re-
flectance average of 79 per cent, mfr
states, based on lab tests. Product
can be painted according to mfr's in-
structions.

AIA FILE NO. 39-B

MFR: OHIO LIME CO.

Circle 243 for further information

PLASTICS APPLICATIONS



MOLDED PLASTIC SPEAKER BAFFLES

MFR'S DESCRIPTION: line of injection
molded plastic speaker baffles for ceil-
ing and wall mounting.

USES: hospitals, schools, homes, ships
or planes.

SPECS/FEATURES: mfr states that
Coloramic plastic speaker baffles com-
bine beauty and excellent sound re-
production with ease of installation
and outstanding durability. They are
molded of Monsanto *Lustrex Hi-Test*
88 high-impact styrene. This mate-
rial will not chip, is corrosion re-
sistant, and can be easily drilled. It
can be painted with any good latex
paint. Two of the baffles are 8-inch
speaker models for recessed mount-
ing. The third is a wall intercom
plate that accommodates a 3½-inch
speaker. Unique slots in the concen-
tric deflectors provide 360° sound dis-
persion on the model designed pri-

PRODUCTS, EQUIPMENT, MATERIALS

marily as a ceiling baffle. Available in white and beige.

AIA FILE NO. 31-i-7

MFR: LOWELL MANUFACTURING CO.

Circle 244 for further information



VINYL SHEETS CREATE TRANSLUCENT WINDOW GLASS

MFR'S DESCRIPTION: ordinary window glass may now be converted to admit sunlight without glare by covering the glass with *Shade*, a *Krene* vinyl sheeting.

USES: for reducing glare in buildings with extensive glass areas, such as hospitals, factories, schools and other structures, and also in residences.

SPECS/FEATURES: the vinyl sheeting is available in a variety of colors, ranging from filtered white to olive green transparent. Three of the colors absorb heat as well as glare. Easily applied or removed, product is custom cut to required size, and is washable. It resists moisture, mildew, and oils, and is not easily soiled. It is long-wearing and resistant to tearing, abrasion, and cracking. According to mfr, *Shade*, when properly applied, will remain in place as long as desired, yet is quickly stripped off by merely prying up one corner. It then can be stored for re-use, if desired.

MFR: TRANSEAL, LTD.

AIA FILE NO. 24-B

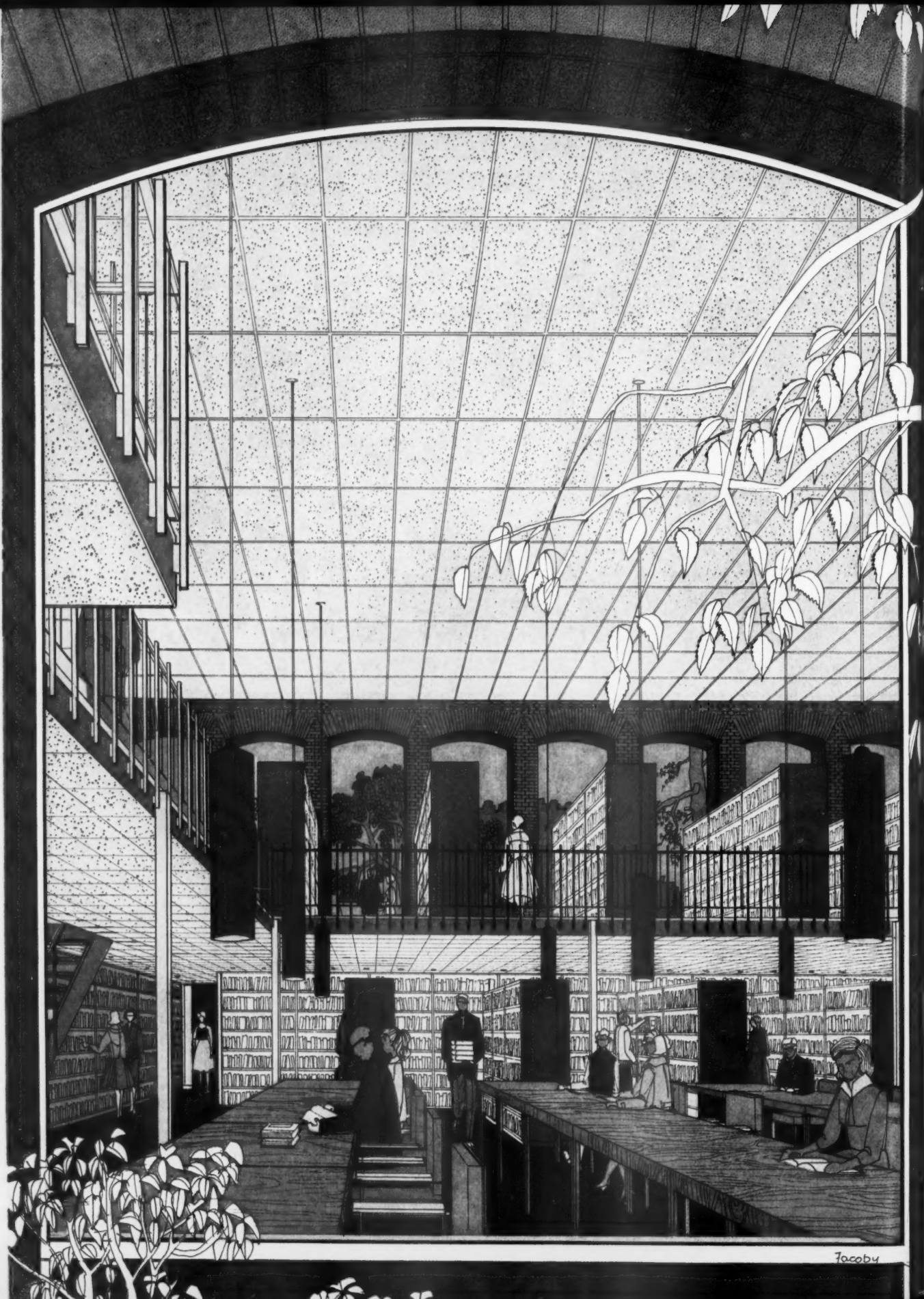
Circle 245 for further information

TRANSPARENT STORAGE TUBES

MFR'S DESCRIPTION: series of transparent tubes extruded from *Tenite* butyrate plastic.

USES: protective storage cases for electronic parts, instruction books, blueprints, etc., and merchandising display.

SPECS/FEATURES: transparency of the plastic permits stored contents to be readily identified. The tubes are available in various diameters and



Circle 118 for further information →

Jacoby

From Armstrong: a giant step in fire-retardant ceilings

**Now, for libraries: two types
of Acoustical Fire Guard—12" x 12" tiles
and new lay-in units**

The main ceiling of the library on the left has the new Acoustical Fire Guard *lay-in* ceiling. The first floor ceiling, which you see just below the mezzanine, is of Acoustical Fire Guard *tile*.

This was the first time-design-rated acoustical tile. Since it was first introduced by Armstrong two years ago, millions of feet have been installed.

The new lay-in system is another great advance in fire-retardant ceilings. Here's why.

Unique New Suspension System

Because of a new type of suspension system, the Armstrong Acoustical Fire Guard lay-in ceiling combines the advantages of an exposed grid system—economy and fast installation—with those of a time-design-rated acoustical ceiling. Here's how the lay-in units work with the specially designed Fire Guard Grid Suspension System* to protect the structural components of a building.

Ceiling Withstands 2000 Degrees

The lay-in unit—because of its composition—can withstand exposure to flames and 2,000-degree heat. The new grid system, designed exclusively to support these units, will resist this same intense heat by allowing its members to expand, thus holding the lay-in units firmly in place. This suspension system is the first to be combined with a lay-in ceiling unit to offer rated fire protection. Both the lay-in unit and the grid system carry the U.L. label.

Armstrong ACOUSTICAL CEILINGS

First in fire-retardant acoustical ceilings

Architectural design and
rendering by Helmut Jacoby

Underwriters' Laboratories, Inc., has given the Fire Guard lay-in ceiling system a beam protection rating of three hours. Floor-ceiling assemblies combining it with bar joist and slab, as well as with beam and steel floor construction, earned two-hour ratings. In areas which require more protection, Acoustical Fire Guard *tile* can be used. It has U.L. ratings of up to *four* hours.

Cost Low, Savings High

In most cases, the new lay-in ceiling will cost even less than ordinary plaster ceilings on metal lath. And like tile, the new ceiling can save builders up to *two months'* construction time. This means that a building like this library may open two months earlier.

A Choice of Design

The Acoustical Fire Guard lay-in ceiling is now available in both the Classic and Fissured designs. There are two nominal sizes: 24" x 24" x 5/8" and 24" x 48" x 5/8".

For more information about either Acoustical Fire Guard tile or lay-in units, call your Armstrong Acoustical Contractor (he's in the Yellow Pages under "Acoustical Ceilings") or your nearest Armstrong District Office. Or write to Armstrong Cork Company, 4203 Ryman Street, Lancaster, Pennsylvania.

* Patent pending

**PRODUCTS,
EQUIPMENT,
MATERIALS**

lengths. Friction caps of red polyethylene are easy to remove and provide convenient access.

AIA FILE NO. 35-H-5

MFR: NATIONAL PLASTICRAFTERS, INC.
Circle 246 for further information

**PLASTIC PANELING WITH
20-YEAR GUARANTEE**

MFR'S DESCRIPTION: *Stylux** 20 fiber-glass-reinforced plastic panel is guaranteed for 20 years to retain uniform surface condition with no blooming of fibers, erosion or surface failure, will remain shatterproof and will retain color and light transmission characteristics.

USES: sidewalls, partitions, sunshades, windbreaks, skylighting, glazing and other decorative applications.

SPECS/FEATURES: mfr's guarantee is based on a newly developed formulation that resists deteriorating effects of sunlight and water, major causes of checking, fading and clouding. Panels are reinforced with 2 oz. of fiberglass, and contain polyester resin modified with 15 per cent acrylic monomer to provide a total weight of 8 oz. psf. The panels exceed commercial standards CS-214-57 issued by the U. S. Dept. of Commerce. Available in wide range of colors.

AIA FILE NO. 23-D

MFR: BUTLER MANUFACTURING CO.

Circle 247 for further information

**PLASTIC APPLICATION
GIVES CERAMIC FINISH**

MFR'S DESCRIPTION: *Glaz-Tile*, a spray, brush or roller applied polyester plastic, gives a smooth, tough finish comparable to tile in appearance and durability.

USES: as a decorative and functional finish to masonry, concrete, wood, metal, plaster and wallboards.

SPECS/FEATURES: product becomes an integral component of porous materials and will not chip or flake off, mfr states. It forms a non-porous surface that makes it ideal for surfaces where easy clean-up is important. Available in complete color range.

AIA FILE NO. 24-B

MFR: PLASTIC KOLOR, INC.

Circle 248 for further information

LIGHTING FIXTURES

**AIR-HANDLING
TROFFERS**

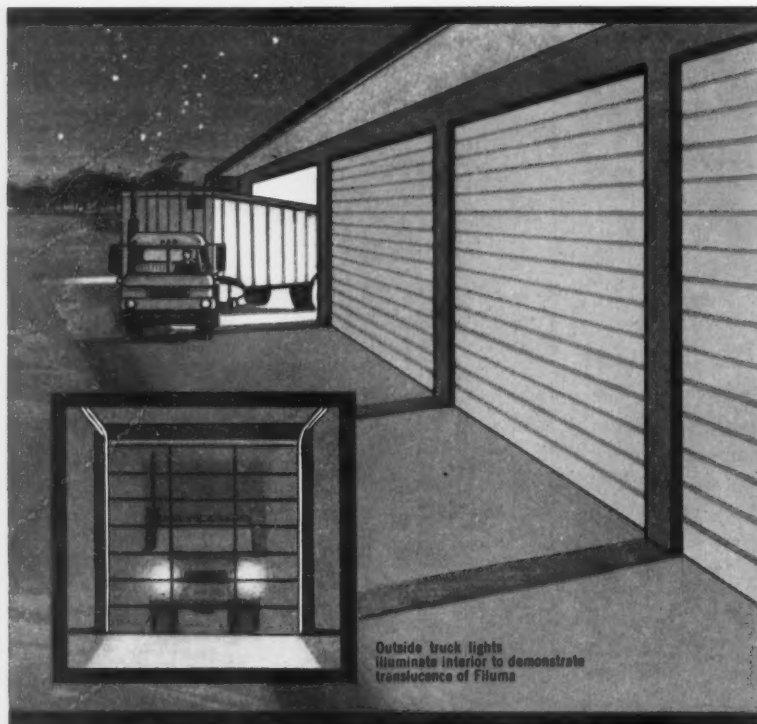
MFR'S DESCRIPTION: complete line of 1' and 2' wide air-handling troffers with several shielding types.

USES: lighting and air-diffusion applications

Circle 118 for further information

FILUMA® *Fiberglass-Aluminum Extension Spring Doors*

**Performance-proved translucent overhead type door
for commercial and industrial use**



Outside truck lights
illuminate interior to demonstrate
translucence of Filuma

- Clean lines for modern building design
- Lets light in like a skylight
- Saves window installations

Filuma is winning increased preference by operators and builders of many kinds of business and types of construction for these reasons: *Translucence*—light floods in to vastly improve working conditions. *Light weight*—only one-third that of wood doors . . . a much smaller power unit can operate the largest sizes. *Modern materials*—reinforced fiberglass panels, in a sculptured design, are encased in tempered extruded aluminum with reinforcing rails for all sizes. *Durable and maintenance free*—will not split, impervious to corrosion. Shatterproof, shrinkproof, weatherproof. Never needs painting. Hoses clean. *Custom made* to fit door openings up to 14' high or 16' wide. *Five colors*—white, yellow, green, tan, coral. Trained installation not required. Filuma is nationally distributed through lumber yards and building supply dealers.

SWEETS 16i/FRA



FILUMA IS A PRODUCT OF

FRANTZ
MANUFACTURING COMPANY
STERLING, ILLINOIS

Manufacturers of Over 100 Sizes and Styles of Sectional and One-Piece Overhead Type Doors for Residential, Commercial, and Industrial Application. Extension and Torsion Spring.

Circle 119 for further information

PRODUCTS, EQUIPMENT, MATERIALS

SPECS/FEATURES: air-handling troffers are designed as supply and/or return units to meet UL specifications. Troffers using 40 W rapid start lamps are supplied in 1' x 4' and 1' x 8' housings with 2 and 3 lamp cross sections, plus 2' x 4' housings with 2, 3 and 4 lamps. Units accommodate all popular acoustical ceiling types—also include snap-up hangers.

AIA FILE NO. 30-J

MFR: LIGHTING FIXTURES DIV., SYLVANIA ELECTRIC PRODUCTS, INC.

Circle 249 for further information



SWIMMING POOL LAMP BEAMS LIGHT UNDERWATER

MFR'S DESCRIPTION: swimming pool lamp increases bather safety when operated on 12 v. from a remotely located isolating transformer.

USES: indoor and outdoor swimming pools.

SPECS/FEATURES: lamp is 7" in diameter and resembles a sealed-beam auto lamp in that it has a built-in reflector. It throws a wide flood of light under water—90° horizontally and 40° vertically—and has a peak beam candlepower of 13,500. Although it is made of hard glass, the lamp is recommended for use behind a cover plate in a water-tight housing. Bulb breakage is possible if the lamp is touched by water after becoming hot during operation. Rated at 300 w., the lamp retails at \$5.75.

AIA FILE NO. 31-F-30

MFR: GENERAL ELECTRIC CO.

Circle 250 for further information



OUTDOOR PORTABLE LIGHTING UNITS

MFR'S DESCRIPTION: a collection of George Nelson-designed portable lighting units for outdoor and many indoor applications.

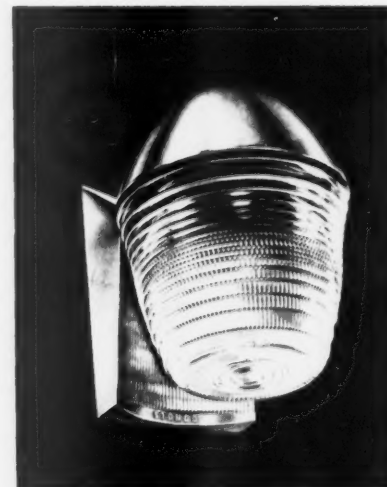
USES: patios, gardens, gazebos, entryways, etc.

SPECS/FEATURES: both the scaling and the dark bronze finish of these designs are intended to give the lamps a definite outdoor appearance. Fully weatherproofed, these units have been engineered and constructed for extensive year-round durability, mfr states. Every lamp comes with a heavy, rubber-covered three-conductor cord and three-prong plug. No switches are placed directly on any of these designs. All bases, upright shafts and framing are solid brass. Shaped parts, such as reflector cylinders and hoods, are made of special lead-coated steel. Interior surfaces of reflectors are baked white enamel. Wiring devices are UL approved.

AIA FILE NO. 31-F-22

MFR: NESSEN STUDIO INC.

Circle 251 for further information



PRISMATIC LUMINAIRE PROJECTS LIGHT DOWNWARD

MFR'S DESCRIPTION: prismatic luminaire directs most of its output downward to illuminate the vital area beneath and projects a separate wide-spread pattern of light to softly blanket the surrounding area.

USES: exterior lighting applications in entrances, carports, doorways, and other locations where high levels of glare-free lighting are needed.

SPECS/FEATURES: distribution of light directly down and softly out, is maintained with 100 w., 150 w., or 200 w. lamps by an adjustable socket that insures identical filament location regardless of lamp size. Fixtures are equipped with two reflectors. Inside, a specular aluminum reflector redirects "trapped" light. Outside, a mirror-bright weatherproof reflector deflects "backlight," usually wasted on building walls. The complete line in-

cludes one- and two-light units for wall, ceiling or custom pendant mounting, available in satin, brass, copper or bronze metallic finishes that are resistive to corrosion and outdoor weathering. All fixtures are corrosion-proof precision die-cast aluminum, fully gasketed and sealed for weatherproof performance.

AIA FILE NO. 31-F-22

MFR: STONCO ELECTRIC PRODUCTS CO.

Circle 252 for further information

MISCELLANY



ECONOMY COMPACT TWO-WAY RADIO

MFR'S DESCRIPTION: line of low-priced, lightweight, compact two-way radios.

USES: field communication.

SPECS/FEATURES: the 15 W units are known as Pacers and sell for \$419. Designed for operation in low band (27-50 mc.) and high band (150-174 mc.), the units have full-quality VHF-FM audio. They have 15 tubes and 2 transistors. They are 4 1/4" high, 7 3/4" wide, and 12 1/2" long. They are designed to fit under the dash of the newer, smaller vehicles now marketed without cramping passengers.

AIA FILE NO. 31-i-6

MFR: COMMUNICATION PRODUCTS DEPT., GENERAL ELECTRIC

Circle 253 for further information

BUILT-IN LEISURE UNITS

MFR'S DESCRIPTION: built-in unit holds toilet tissues, smoking accessories, magazines and cleaning brushes.

USES: bathrooms.

SPECS/FEATURES: frames are of stainless steel, bodies are finished in neutral gray baked enamel. Rough opening size is 14" x 20" for "between stud" installation. Saves two square feet of tile or plaster. Available in two models—Model 35 with an enclosed toilet brush compartment (as shown), and Model 25 with shelves and racks only.

AIA FILE NO. 29-J

MFR: JENSEN INDUSTRIES

Circle 254 for further information

POLYSULFIDE CAULKING AND GLAZING COMPOUND

MFR'S DESCRIPTION: Pro-Seal 929, a one-part, polysulfide based caulking and glazing compound which cures to

NEW HEXCEL HONEYGLO....



Improved Light Diffusion with the Distinctive "Honeycomb Look"

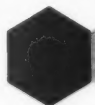
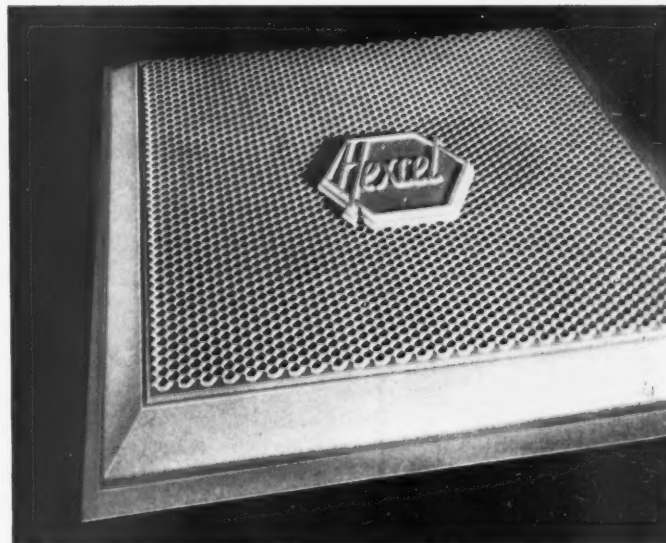
NEW HONEYGLO

luminous ceiling panels offer an appreciably higher Coefficient of Utilization than any other standard plastic light diffuser. The reason? HONEYGLO's attractive honeycomb surface pattern provides over 2000 individual light-diffusers. Standard 2' x 2' HONEYGLO panels are easy to install with a T-bar system... just as easy to remove for regular maintenance. Double-pan construction cuts down "show-through" from below of objects

that may fall from above. HONEYGLO panels can't attract dirt and dust because they're destaticized... can't support combustion because they're self-extinguishing.

NEW design individuality can be added to Honeyglo panels by custom molding company name, trademark, or medallion into the honeycomb surface of the panels. Without sacrificing illumination levels, this unique decorative accent complements other interior design features of clubs, restaurants, hotels, or institutions.

HONEYGLO luminous ceilings are a product of Hexcel Products Inc., manufacturers of HONEYLITE® open-cell honeycomb louvers. For complete information on the Hexcel product best suited to your lighting requirements, call your nearest Hexcel representative. Or write Dept. 3-K.



HEXCEL® PRODUCTS INC.

World's Largest Manufacturer of Honeycomb Products and Materials

Executive Offices: 2332 Fourth Street, Berkeley, California

Plants: Oakland and Berkeley, Calif.; Havre de Grace, Md.

Sales Offices: Long Island City, N. Y.; Chicago, Ill.; Fort Worth, Texas; Inglewood, Calif.



MAHON CURTAIN WALL

In natural or colored metals

... A POWERFUL COMBINATION—
LONG-LASTING GOOD LOOKS,
SHORT-TIME INSTALLATION

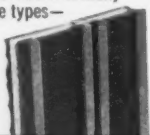
The Moses-Saunders Power Dam near Massena, N. Y.—a vital facility of the St. Lawrence Power Project. The 28-ft. high Curtain Wall is almost a mile long—Mahon's fluted, field-constructed aluminum 3-6-3 section.

Engineers: Uhl, Hall & Rich, Boston and Hydro-Electric Power Comm. of Ont.

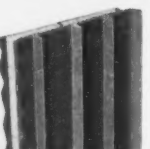
This joint Canadian-American project (for the Power Authority of the State of New York and the Hydro-Electric Power Commission of Ontario) points up how Mahon Metal Curtain Walls offer a practical answer to many architectural, structural . . . and budget problems. Whether your current or future projects are large or small, ground-hugging or cloud-reaching, industrial or commercial—investigate all the advantages of Fiberglass-insulated Mahon Curtain Walls. There's a type to suit your every requirement. Details in new Catalog CW-61. Write for it or ask your local Mahon architectural representative to drop one by.

Mahon Curtain Walls are supplied in galvanized, porcelainized, enameled or stainless steel, and aluminum in many finishes, each in three types—

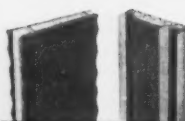
FLUTED
field
constructed



RIBBED
field
constructed



FLUSH or
FLUTED
prefab
panels



SPEEDING AMERICAN
CONSTRUCTION WITH
METAL BUILDING
PRODUCTS, FABRICATED
EQUIPMENT AND
ERECTION SERVICES

MAHON BUILDING PRODUCTS

- Aluminum or Steel Curtain Walls (in natural or colored metals)
- Rolling Steel Doors (Standard or Underwriters' labeled)
- Metalclad Fire Walls (Underwriters' rated)
- M-Floors (Steel Cellular Sub-Floors)
- Long Span M-Deck (Cellular or Open Beam)
- Steel Roof Deck
- Acoustical and Troffer Forms
- Acoustical Metal Walls, Partitions and Roof Decks
- Permanent Concrete Floor Forms

CONSTRUCTION SERVICES

- Structural Steel-Fabrication and Erection
- Steel Fabrication-Weldments
- Geodesic Domes—Fabrication and Erection

THE R. C. MAHON COMPANY

DETROIT 34, MICHIGAN

Manufacturing Plants—Detroit, Michigan and Torrance, California
Sales-Engineering Offices in Detroit, New York, Chicago,
Torrance and San Francisco
Representatives in all principal cities.

MAHON

PRODUCTS, EQUIPMENT, MATERIALS

a long lasting rubbery seal, has been introduced.

USES: glazing applications.

SPECS/FEATURES: material requires no mixing of base and catalyst, handling of frozen tubes or other special preparation. Has excellent "gun flow," is non-sag and has true thixotropy, excellent wetting properties and good adhesion, mfr states It is reported color-fast, and available in white, black, aluminum and gray.

AIA FILE NO. 26-B-2

MFR: COAST PRO-SEAL MFG. CO.

Circle 255 for further information

CHIMNEY TILE LINER GUARD

MFR'S DESCRIPTION: *Flue-Kap* is a guard to fit on chimney tile liners to protect the home from damaging rain, snow, birds and squirrels and other rodents.

USES: residential applications.

SPECS/FEATURES: *Flue-Kap* is fabricated of heavy galvanized metal with diamond mesh spark arrester siding. Fires caused by flue-clogging tree foliage and bird nests are eliminated, as well as odors from unsanitary debris which accumulates in unprotected openings.

AIA FILE NO. 5-H

MFR: JO-MOCO PRODUCTS

Circle 256 for further information

MATERIALS HANDLING SYSTEM OF PRESTRESSED CONCRETE

MFR'S DESCRIPTION: a materials handling system that uses prestressed concrete channels as the conveyor support.

USES: general construction applications.

SPECS/FEATURES: U-shaped beams are inverted to provide a protective cover for the belt, drive, idlers and the material being handled. Lower initial cost is cited as the chief advantage of the prestressed construction. Inserts for idler attachment are integrally cast in the channels, eliminating the need for steel hangers. Supporting piers and changeovers may be pre-cast or cast-in-place and no steel structurals are required. Mfr reports savings of 40 per cent over conventional steel construction, and lowered maintenance costs due to the concrete's inherent freedom from weathering and to the ease of servicing made possible by inspection ports at each idler. Mfr stresses aesthetic appearance.

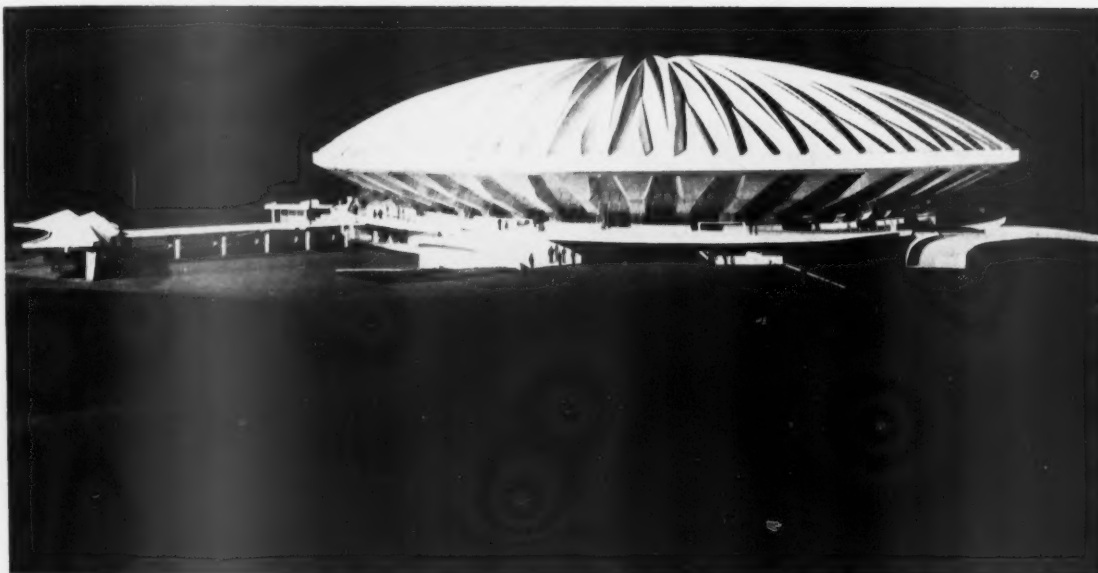
AIA FILE NO. 31-i-1

MFR: FRANK J. MADISON CO.

Circle 257 for further information

Circle 121 for further information

ASSEMBLY HALL	project
UNIVERSITY OF ILLINOIS	client
HARRISON & ABRAMOVITZ	architects
AMMANN & WHITNEY	structural engineers
SYSKA & HENNESSY	mechanical/electrical engineers
CLARKE & RAPUANO	consulting engineers/landscape architects



General program

The Assembly Hall, conceived and designed as a multi-purpose building, will serve many University needs related to organized student activities and recreation, and also some civic functions of the community, county, and state. Being part of the South Campus Development, the Assembly Hall is located just south of Memorial Stadium, thereby grouping indoor and outdoor assembly facilities in one area.

Site

The 39-acre site is nearly square in shape and is bordered by streets on all sides. Each corner of the site is allocated to a parking area with access to the bordering streets as well as a connecting road to the other parking areas, thus providing the utmost flexibility in traffic control. These parking areas are screened by planting. The total parking area capacity is 2000 cars. Walks from the streets lead to a large paved area surrounding the building, which provides exterior exhibition and circulation space. An access road at the west side of the site leads to an exterior canopy at west entrance, the only entrance at grade. The service road to the exterior truck dock is at the north side of the site. Lawn area at the south of the building has been graded to provide a natural amphitheatre for outdoor concerts and plays. Landscaping of the site is planned to result in a subdued frame of reference and scale for the building with definition of the various areas involved.

Seating area

The Assembly Hall consists of a circular, bowl-shaped Seating Area, about 400 feet in diameter, sunk below grade, providing an unobstructed view of the area from all seats. Capacity of this area is 15,830 permanent seats for sports events, conventions, rallies, etc. A wedge-shaped segment of 4,142 seats can be divided by portable screens to provide a smaller seating area for productions needing stage facilities as concerts and

theatrical presentations. In addition there are 80 permanent seats for players, space for 142 spectators in wheelchairs, and space for 76 representatives from the radio and press, resulting in a total capacity of 16,128 persons in fixed seating area. If required, an additional 1,500 portable seats can be placed on the activities floor, giving a total maximum capacity of 17,628 persons.

Concourse level

Outside of and completely surrounding that area is a metal and glass enclosed Concourse Level which will serve as exhibition space and interior circulation area with twenty-four connecting bridges to vomitories leading to the Seating Area. These bridges are located in alternate bays with those locations without bridges open to the level below. The exterior of the Concourse Level is a balcony with connecting bridges and ramps to grade.

Office level

Below the Concourse Level and connected to it by stairs is an Office Level which includes necessary offices for the building, ticket offices, meeting rooms, lounge and dining area, serving kitchen, and public toilet facilities at four different locations. Additional exhibition space is available on this level at the inner perimeter of the continuous circulation corridor. The main entrance to the building, the only one at grade, is at the west side of this level.

Mechanical equipment rooms

At the north and south ends of the building, lower than the Office Level, are located mechanical and electrical equipment rooms which are interconnected on east and west sides by a trench below the Office Level corridor.

Service level

The lowest floor is the Service Level, connected to the activities floor by a tunnel under the grandstand. This level includes storage areas, service facilities, dishwashing area, team toilets, shower and locker rooms, ward-

robe rooms, and Green Room. A Mezzanine Level contains theatre dressing rooms, and additional toilet and shower facilities. Locker Rooms on Service Level can also serve as chorus dressing rooms required by student productions or traveling professional shows. This level is connected to the Mechanical, Office, and Concourse Levels by an interior freight elevator with an additional freight elevator at the exterior which connects to a truck dock at grade.

Public access and exits

Public access to the building and seating area is by ramps from the grade to the Concourse Level. At grade at the west side of the building is the entrance to be used by spectators in wheelchairs who can proceed to their space in the seating area through corridor and down ramps.

On the Concourse Level emergency exits lead to the balcony; on the Office Level, emergency exit stairs lead to grade.

Construction

The Assembly Hall is reinforced concrete construction. Aside from the activity floor and grandstand slab on grade, the Seating Area portion consists of six structural elements. Starting from the top, these are: 1) Center compression ring; 2) Twenty-four wedge shaped folded plate dome segments; 3) Edge beam with prestressed ring girder; 4) Forty-eight segments of folded plate grandstand; 5) Forty-eight buttresses; and 6) A continuous ring footing. The structural elements 1) through 4) are of lightweight concrete, and the remaining elements of the Seating Area as well as the rest of the building are of stone concrete.

Center compression ring will be poured prior to and will act as the center hub for the dome segments. This ring, 4'-0" thick with an internal diameter of 21'-6" and an external diameter of 43'-0" will be supported on a tower frame until the edge beam is fully prestressed. The dome has a spring line diameter of 398'-0" and a rise of 60'-0". Each segment is a folded plate which varies in depth up to a maximum of 7'-6" with a typical web thickness of 3½". To provide thermal insulation and sound absorption in the Seating Area, the underside of the dome is completely covered with 2" thick panels of cement and wood fibers. These panels are installed as a form liner and mechanically anchored to the concrete.

Between the form liner and the concrete is a spray-on vapor barrier. The exterior of the dome will be covered with a plastic material applied in four coats with a total thickness of 15 mils.

The edge beam, poured integrally with the folded plate grandstand, forms the surface for the application of the prestressed ring girder. This girder consists of a cross section area of 85 square inches of ¼" diameter steel wire stressed to 120,000 pounds per square inch. The wire applied continuously to the edge beam will be applied in layers alternating with layers of pneumatic grout which provides a surface for succeeding layers of wire. Edge beam and prestressed ring girder are covered with an additional ring of concrete which forms a gutter for the dome.

Folded plate grandstand, hinged at the top of the buttresses, and the edge beam rise 23'-0" at a slope of 1:2. Web and lower plate thickness of this element

at Trans-Canada Air Lines Base

(Dorval, P. Q.)...



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varies from 6" to 15". Subsequently poured hollow seating risers and treads close off the top of the folded plate, this space forming a return air plenum down to the top of the buttresses.

The forty-eight buttresses, carrying the dead load and superimposed line load, transmit same down to the continuous ring footing, which rests on soil with a bearing capacity of 5000 pounds per square foot.

Because of ground water conditions, there is a continuous sub-surface drainage ring at the perimeter of the Office and Service Levels, Mechanical Trench and Seating Area activity floor, each of the continuous rings terminating in a sump pit on the Service Level.

HVAC

The mechanical system for the building includes heating and ventilation for all areas except the offices, T.V. Studio, and theatre dressing rooms, which are air conditioned. In addition, Office Level has a perimeter hot water radiation system.

Low-pressure steam is supplied to the buildings through tunnels from the Owner's power plant, the steam used for heating being the excess from that used for generation of electric power. Fresh air intake and exhaust from all systems are located in areaway with grating at grade at each mechanical equipment room. Cooling tower and refrigeration equipment are located in North Mechanical Equipment Room.

Ducts serving the Seating Area are routed from equipment through trenches, up through slots in Office Level slab to the top of the buttresses, and up through the lower part of folded plate grandstand.

Supply outlets in that area are located at upper perimeter, over all vomitory entrances and north and south ends of activity floor. Exhaust is located in seating risers over folded plate grandstand, lower transverse aisle, and east and west sides of activity floor. At twelve locations at the perimeter of the seating area, there are exhaust openings in the dome controlled by gravity operated dampers. At the center ring of the dome are located emergency smoke exhaust vents and a supplementary exhaust fan.

On the Concourse Level the air supply outlet is located at the base of the glazed wall, and return for this area is located in soffit portion of the Office Level corridor wall.

Electrical

Electric Power, supplied from the Owner's power plant, is brought to the building at 4160 V. and transformed as required at electric switchgear room at north and south ends of the building and at substation adjacent to projection booth in Seating Area.

Lighting

General Lighting of the Seating Area is accomplished by a combination of fluorescent and mercury-vapor fixtures located on the suspended catwalks and directed at the dome. Since the dome surface acts as a reflector to provide indirect illumination, the four inner panels were pre-finished a pink-white to provide a warm light in the area.

The Concourse Level is also indirectly illuminated by a combination of fluorescent and incandescent fixtures located between buttresses on platforms located below folded plate grandstand. Targeting of these fixtures against the underside of the grandstand provides general illumination of the Concourse Level as well as the exterior balcony and area immediately surrounding the building. Fixtures at vomitories and exits on this level are also connected to emergency power for egress lighting.

Office areas are lighted by fluorescent fixtures recessed in the hung ceiling. In exit lobbies, dining and lounge areas, recessed incandescent downlights are provided for general illumination. Office level circulation corridor

is lighted by incandescent fixtures located on the underside of the Concourse Level bridges and by downlights located in indirect lighting platforms provided for Concourse Level illumination.

Certain fixtures have been connected to an emergency power supply for egress lighting of vomitories, and the corridor and lobbies on the Concourse Level. The same provision has been made at all ramps to grade and exit stairs.

Provision has been made for future lighting of the site and all parking areas by installation of manholes and required duct banks.

Seating equipment

Seats for the building are a radical departure from previous standards. Designed by the architects with the cooperation of the manufacturer, the seats are riser-mounted, center standard with reinforced plastic seat and back. Those seats which constitute theatre quadrant will be upholstered, but with a plastic back, and an arm has been added to provide maximum comfort. All seats are self-raising with a perforated underseat pan backed up with sound absorption in the area. Seats have been spaced to provide for future installation of arms on those outside of the theatre quadrant.

Theatre facilities

There are certain special features included which increase the potential uses of the Assembly Hall.

In the Seating Area there is a 50'-0" x 90'-0" gridiron suspended 85'-0" above the activity floor, which contains a mechanized rigging system for 32 lines. Rigging will be controlled from a portable console stored on the activity floor level and located at the side of the stage during a performance.

Supplementing these theatrical facilities are platforms for spotlights on east and west access catwalks, four suspended spotlight platforms, two each at the north and south ends of the Seating Area, and space for additional spotlights on top of the projection booths. Stage lighting will be controlled from a console in projection booth or from portable console at activity floor.

Projection booth

At rear of seating area behind theatre quadrant seating is the projection booth with facilities for both 16mm and 35mm movies. Adjacent to the projection booth area is a dimmer equipment room, and on the opposite end are located two radio control booths.

T.V. and movie film

There are platforms for T.V. camera or movie camera facilities at the east and west sides of the Seating Area and at the rear of the second tier. To supplement the camera activities on the activity floor, there is a T.V. Studio on the Service Level which can be used for interviews, control, and commercials. The west platform also serves as the control point for the sound-reinforcement system.

The sound-reinforcement equipment includes facilities for maximum flexibility in the type and extent of service desirable in such an area. On the activity floor there are provisions for additional T.V. camera equipment. Controls for the operation of a suspended 4-slided scoreboard for athletic events are placed near the officials table at the west side of the floor.

Facilities for musical events

A demountable acoustical shell is included as part of the facilities for expanding the use of the building. This shell will be large enough to hold a symphony orchestra but can be reduced in size for smaller groups requiring sound reinforcement.

Areas and cost

Total usable floor area

Total volume

Total cost

267,977 square feet

9,644,807 cubic feet

\$7,750,000

LITERATURE

Literature cited in this department is available from various manufacturers and associations free of charge, except where indicated. To obtain copies, circle the keyed numbers on the reader service cards facing pages 1 and 52.

ALUMINUM PRODUCTS

Multi-colored 1961 catalog on aluminum product line offered. Separate sections illustrate and describe aluminum store fronts, entrances, curtain walls and custom fabrication.

AIA FILE NOS. 16-E, 26-D

MFR: THE ALUMILINE CORP.

Circle 300

PAINT SELECTOR GUIDE

Dial-A-Paint selector wheel provides a guide to mfr's line of paints and is handy device for determining type of paint for every interior, exterior or metal surface. The unit is conveniently sized for permanent desk or drawing board reference service. A turn of the dial to any of 29 different types of paint jobs quickly brings the required type of paint into view.

AIA FILE NO. 25

MFR: LUMINALL PAINTS, DIV. OF NATIONAL CHEMICAL & MFG. CO.

Circle 301

DRYWALL PARTITION PANELS

Recent technical bulletin provides data on several types of drywall panels and systems for partitioning. Included are photos, drawings, data and specifications on mfr's Asbestone, Durasan, and Durasan twin panels. Full-color photos illustrate possible uses, and details are given on several recommended framing systems.

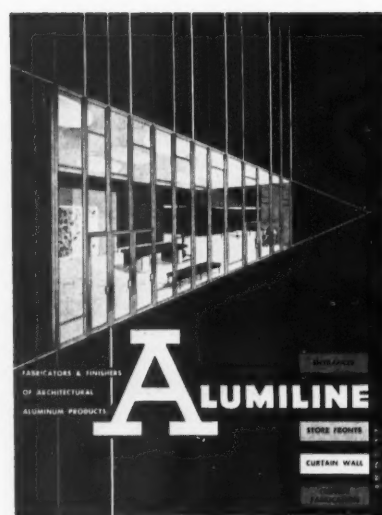
AIA FILE NO. 35-H-6

MFR: NATIONAL GYPSUM CO.

Circle 302

ACOUSTICAL PRODUCTS

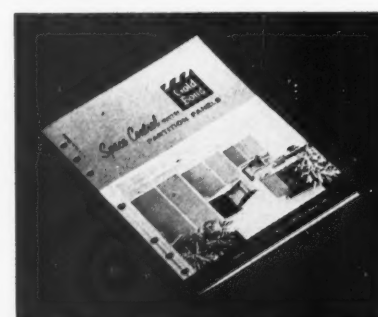
A fully illustrated 1961 acoustical products catalog is currently available. Comprehensive tables of technical information, including sound absorption coefficients, physical characteristics and specifications, have been included for mfr's complete line of acoustical products. A feature of the handy reference catalog is a complete page of detailed installation recommendations outlining prepara-



ALUMINUM PRODUCTS



PAINT SELECTOR GUIDE



DRYWALL PARTITION PANELS

tory work, job conditions, techniques and various application methods. Graphic illustrations of mounting tips also are included in the book. The line includes: the four textures of Forestone woodfiber acoustical ceiling tile; Forestone ceiling board and roof deck; metal acoustical units; perforated cement asbestos board and perforated hardboard. (16 pp.)

AIA FILE NO. 39-B

MFR: SIMPSON TIMBER CO.

Circle 303

FIRE FIGHTING EQUIPMENT

The 1961 edition of *Interior Fire Fighting Equipment* is announced. It provides complete and latest information on mfr's line of portable fire safety equipment for commercial and institutional use. Catalog includes comprehensive and specification data on various extinguishers, hoses and accessories. (16 pp.)

AIA FILE NOS. 29-E-2,3

MFR: THE FYR-FYTER CO.

Circle 304

TAX RETURN COPIER

Guide for Reproducing Federal Tax Returns in any Thermo-Fax copying machine is available. Booklet includes a reference table on correct size, type and color of paper to be used. Also included is a list of suggestions to follow when preparing dry copy tax returns for filing. States which authorize reproductions of tax returns are named. (4 pp.)

AIA FILE NO. 35-H-31

MFR: MINNESOTA MINING AND MANUFACTURING CO.

Circle 305

HYPERBOLIC-PARABOLOIDS

An analysis of simple hyperbolic-paraboloid shells in wood, is treated in current brochure. Covered are the principal forces to be considered in the design—the reactions, the compression forces in the perimeter members, the shear forces at the junction of the sheathing and the

perimeter members, and the direct tensile and compression forces in the sheathing. Recent wood hyperbolic-paraboloid design, the Forest Products Pavilion in Oregon, is shown as finished project and in step-by-step progress photos. Architect for this project was John Storrs; structural engineer was James G. Pier-son. (8 pp.)

AIA FILE NO. 19-N

ASSN: WEST COAST LUMBERMEN'S ASSN.

Circle 306

ASBESTOS-ASPHALT PAVING

A specially milled asbaltic asbestos fiber, which has been utilized in numerous field test strips of asbestos-asphalt paving, has been introduced in a current brochure, No. AFD-12-A. Included in the brochure are the benefits demonstrated through actual application of asbaltic to asbestos-asphalt paving. These include: increased resistance to deformation and shoving; increased impact strength at low temperature; increased overlay extensibility; inhibited cracking failures; and reduced pavement thickness while maintaining or improving performance specifications. (4 pp.)

AIA FILE NO. 11

MFR: JOHNS-MANVILLE CORP.

Circle 307

LIGHTWEIGHT AGGREGATE

The 1961 edition of *Perlite Lightweight Plaster Aggregate catalog* has been announced. It describes in detail, specification for Perlite aggregate plaster covering materials, basecoat, recommendations, finish coat application as well as mix proportion, thermal conductivity and sound reduction data. In addition, data is provided for lightweight fireproofing of walls and partitions, ceilings and columns and beams with detailed drawings. Data on the use of Perlite-Portland cement plaster for curtain wall back-up systems as well

how to Watch without being Seen



↑ From the darker observation room, it's a window...

Whitter School, Peoria, Ill., Architects: Verkler & Tinsman



↑ From the brighter classroom, it's a mirror!

Mirropane®, the "see-thru" mirror, has many uses... in schools, banks, hospitals, stores, homes... anywhere you want to observe without being seen. When *Mirropane* is made with clear plate glass, a light intensity differential of about 7 to 1 is required. For best performance, *Mirropane* made with *Parallel-O-Grey*® is recommended. This reduces the light intensity differential to about 3 to 1. Call your L·O·F distributor or dealer, listed under "Glass" in the Yellow Pages, or write L·O·F, 7831 Libbey-Owens-Ford Building, Toledo 1, Ohio.

MIRROPANE
the "see-thru" mirror



LIBBEY • OWENS • FORD

Circle 123 for further information

LITERATURE

as *Perlite* acoustical plaster is also included. (4 pp.)

AIA FILE NOS. 21-A-5, 21-C-1
ASSN: PERLITE INSTITUTE, INC.
Circle 308

GYPSUM PRODUCTS

Series of illustrated product pamphlets, describing finishing materials, hummer systems, gypsum sheathing, wallboard shingles and other products is now available. Included also is a discussion of the nature and properties of gypsum. AIA FILE NOS. 20-B-2, 21-B-2, etc. MFR: BESTWALL CERTAIN-TEED SALES CORP.

Circle 309

LOW-COST CHALKBOARDS

Recent technical bulletin describes chalkboards and bulletin boards which are built right into the wall for low-cost installation. The installations utilize metal lath and plaster construction. Details for a detachable bulletin board are included. (2 pp.)

AIA FILE NO. 20-B-1
ASSN: METAL LATH MANUFACTURERS ASSN.

Circle 310

HARDBOARD MANUAL

The 1961 *Masonite Construction Manual* provides complete information on the mfr's line of 57 types and thicknesses of hardboard. Descriptions, uses and application data are presented graphically for each type of material. Contents include general data, basic panel types and properties, special types, interior use, interior application, exterior application and other information. (24 pp.)

AIA FILE NOS. 19-D-2, 23-L
MFR: MASONITE CORP.

Circle 311

ASBESTOS-CEMENT SHEET

Folder *BM-231* describes *Kamflex*, a flexible asbestos-cement structural sheet. The folder contains illustrations of the many uses for the sheet and lists all significant properties. (4 pp.)

AIA FILE NO. 4
MFR: KEASBEY & MATTISON CO.
Circle 312

VIBRATION MOUNTS

Revised edition of color brochure covers mfr's line of *Rexon* vibration mounts, a device employing the principle of "rubber-in-shear" to isolate vibration and suppress the sound of operating machinery. The design and construction features of the mount are fully described, diagrammed and illustrated. Engineering details, performance data and installation in-

formation are given. The brochure includes simple tables and instructions which enable quick and accurate computation of the size and type of *Rexon* mount required to support "in shear" the load of given installation. (8 pp.)

AIA FILE NO. 39-D
MFR: HAMILTON KENT MANUFACTURING CO.
Circle 313

CONCRETE

CONCRETE ADMIXTURES

Guide to concrete admixtures, iron-armoured floor products, grouting and waterproofing material, is available. It provides information covering mfr's complete line of concrete and other masonry products. Data on estimating needs for and description of *Pozzolith*, *Embecco*, *Masterplate*, *Anvil Top*, and others is included. (6 pp.)

AIA FILE NOS. 3-B-1,2
MFR: MASTER BUILDERS CO.
Circle 314

COLORED CONCRETE

Recent offering describes *Colorfull* concrete, a structural grade concrete with solid color completely through the mix. Ten available colors are shown. Brochure gives background of product, cites precautions in use, gives installation and maintenance steps, and provides typical specifications. (16 pp.)

AIA FILE NOS. 3-B-2, 3K
MFR: RODEFFER INDUSTRIES, INC.
Circle 315

COMPOSITE CONSTRUCTION

Booklet offered which describes the advantages of composite steel and concrete construction for buildings. It points to savings in steel, greater toughness of beams, and more usable space. The booklet contains a brief history of composite construction, illustrations of several projects employing composite design, and references. (12 pp.)

AIA FILE NO. 17-F
MFR: NELSON STUD WELDING DIV., GREGORY INDUSTRIES, INC.
Circle 316

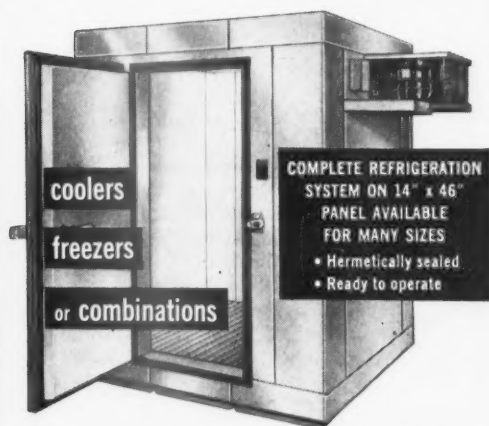
LIGHTING

LIGHTING DESIGN

Booklet *VE-900* provides concise yet thorough coverage of lighting terms, formulas and design factors. The photometric CU tables (pendant and surface mounted data plus 10 per cent and 30 per cent floor reflectances) provide a guide for design calculations. Area lighting systems are covered by formulas and CU tables for both panel and louver-type ceilings. A listing of current recommended illumination levels for

Bally walk-ins

Aluminum or steel sectional construction



Sanitary! Strong! Efficient! You can assemble any size cooler, freezer or combination in any shape from standard sections. Add sections to increase size as your requirements grow. Easy to disassemble for relocation.

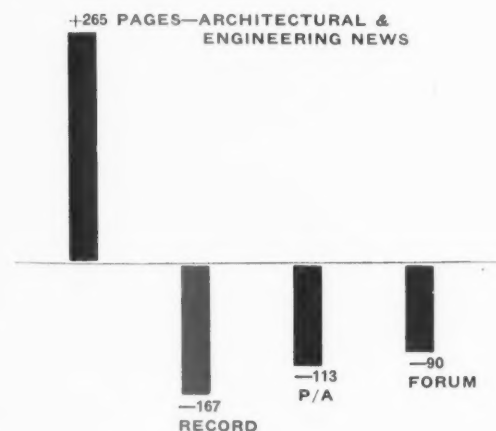
ARCHITECTS: see 8 pages of engineering data in Sect. 26/A of Sweet's Catalog.

Bally Case and Cooler, Inc., Bally, Pa.

Get details—Write Dept. AN-3 for FREE book

Circle 124 for further information

ADVERTISING PAGE GAINS AND LOSSES ALL ARCHITECTURAL MAGAZINES 1960 vs. 1959*



CUMULATIVE LOSS OF
RECORD, P/A, AND FORUM—370 PAGES

*Source: INDUSTRIAL MARKETING,
January, 1961

March 1961

LITERATURE

both panel and louver-type ceilings. A listing of current recommended illumination levels for many applications is contained. (12 pp.)

AIA FILE NO. 31-F-1

MFR: SYLVANIA ELECTRIC PRODUCTS INC.

Circle 317

FLUORESCENT FIXTURES

Brochure B-1 provides comprehensive technical data and general information on mfr's series of recessed fluorescent lighting fixtures and each of the ten diffusing elements available in the series. Fully illustrated with photographs and technical drawings, contents of the brochure include: construction features, specifications, maintenance features, a diffuser check chart, illustrated mounting methods, accessories, trim details for sides and ends, and ordering information. (40 pp.)

AIA FILE NO. 31-F-2

MFR: GLOBE ILLUMINATION CO.

Circle 318

FLUORESCENT BALLASTS

New catalog covers line of ballasts for fluorescent lamps. This 1960-61 edition contains a dual listing by lamp type and catalog number of mfr's line for indoor and outdoor applications with various lamps. All ballasts CBM certified by ETL are indicated. (32 pp.)

AIA FILE NO. 31-F

MFR: UNIVERSAL MANUFACTURING CORP.

Circle 319

LIGHTING FIXTURES

Catalog MM-7 describes and illustrates mfr's line of lighting fixtures. Included are more than 50 newly designed fixtures. Included in the new collection are Swedish globe pendants, a five light chandelier, and an Early American fixture. The catalog also shows budget-priced recessed fixtures, a variety of hall and foyer lights and an assortment of outdoor fixtures. (16 pp.)

AIA FILE NO. 31-F-2

MFR: PROGRESS MANUFACTURING CO.

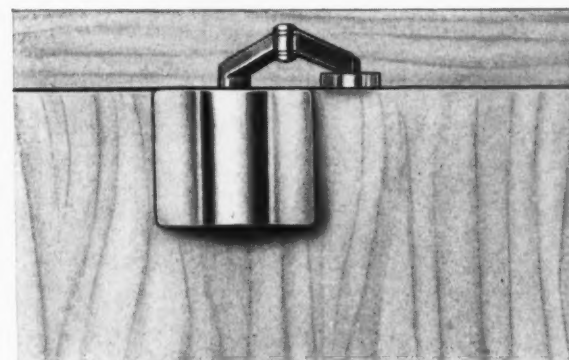
Circle 320

OUTDOOR LIGHTING

Current catalog condenses a good general cross-section of mfr's complete line of cast aluminum outdoor floodlight and fixtures. Included are illustrations, specifications and dimensional drawings on prismatic and opal luminaires, decorative outdoor bullets, underwater lighting, incandescent and mercury vapor floodlights and mounting accessories, as well as die-cast aluminum decorative

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the strongest door closer
ever built...
complete closing
control



Strength-to-spare... trim, attractive... loaded with door control features! Adjusts for speed, latching, silent closing. Available with "delayed action", hold-open arm, fusible link. Semi-concealed or surface installation. Meets Federal Specification No. 3225. UL listed. Write Russell & Erwin Division, The American Hardware Corporation, New Britain, Conn.

Circle 126 for further information

For all Commercial and Institutional
Buildings... Colleges, Apartments, Motels, etc.

CORBIN LETTER BOXES Key or Dial Operated with MODULAR VERSATILITY

All Corbin cast bronze letter boxes are made to widths resulting in an 11" modular. Small boxes measure 3 3/8" in width, medium size, 5 1/2", and large, 11". These dimensions are standards of the Post Office Department. Modular versatility assures the most efficient and effective use of space. The Corbin boxes illustrated can be convenience-keyed so one key opens mail box and interior door.

Write department D3 for Catalog WP28 describing key or dial operated boxes.



CORBIN WOOD PRODUCTS DIVISION
THE AMERICAN HARDWARE CORPORATION
NEW BRITAIN, CONNECTICUT

Circle 127 for further information

Treat concrete structures right

THOROSEAL

against water, weather, erosion



*insure
handsome
long life*

Specify Thoroseal to block out spalling, corrosion, freeze-thaw damage. Cementitious coating keeps out water. Compatible with all masonry and concrete — penetrates deeply and bonds right into the pores.

*keep
clean-lined
designs*

Thoroseal actually becomes part of the wall it coats — and lasts just as long! Not like a thin paint film. Thoroseal lets wall "breathe" so water vapor can't accumulate. Seals weather out for good!

*top rating
for 49
years*

Don't trust your structures to untried products. Rely on the protection that's been job-tested since 1912. Nearly half a century of top performance, under every extreme of weather, water pressure and temperature.



● Building site water problems? Ask about Waterplug — a perfect hydraulic cement; stops even high-pressure leaks instantly. Request free specification guide on all our materials for masonry and concrete.

STANDARD DRY WALL PRODUCTS, INC.
DEPT. A-1, NEW EAGLE, PENNA.

Circle 128 for further information

LITERATURE

and industrial vaportight fixtures.
(8 pp.)
AIA FILE NO. 31-F-22
MFR: STONCO ELECTRIC PRODUCTS CO.
Circle 321

LAMINATES



LAMINATED STRUCTURES

Recent manual contains technical data on the use of laminated wood structural members. Features included are: arch and beam design procedures, connection details, recommendations on adhesives and treatments, a color selection chart for stain finishes, and description and specifications of structural roof decking systems.

AIA FILE NO. 19-B-3
MFR: UNIT STRUCTURES, INC.
Circle 322

DECORATIVE LAMINATES

Publication is announced of a complete file on line of decorative laminates. It provides all information on physical properties, application, details for specialized application, colors, sources of supply, and technical data relating to decorative laminates in general.

AIA FILE NO. 23-L
MFR: PARKWOOD LAMINATES, INC.
Circle 323

LAMINATED PLASTIC

Modern Formica Interiors shows 13 commercial and institutional interiors in full color, all with practical, imaginative applications of *Formica* laminated plastic. Applications range from office partitions to hospital cabinets to theatre ticket booths. The booklet contains paper reproductions of decorative colors, patterns and woodgrains. Also included are illustrated samples of decorative art, a custom service for murals, corporate

emblems and accent panels permanently sealed in the laminated plastic. (12 pp.)
AIA FILE NO. 23-L
MFR: FORMICA CORP., SUBSIDIARY, AMERICAN CYANAMID CORP.
Circle 324

WEATHERPROOFING

CONCEALED FLASHING

What *M-R Robberseal Copper* is and how it is applied quickly for protection against leaks in many flashing applications, is explained in a recent bulletin. Drawings show the product's sandwich construction—a layer of "electro-sheet" copper between heavy coatings of firmly bonded *Robberseal Compound*, a tough, rubbery, non-corrosive material that contains no rubber. The importance of product's workability, firmness, flexibility at both weather extremes, and self-healing tendency is shown in cross-sectional installation details. Recommended weights and specifications for various uses are also included. (4 pp.)

AIA FILE NO. 7
MFR: MITCHELL RAND MANUFACTURING CORP.
Circle 325

WATERPROOFING MEMBRANE

Brochure *JCW-256* describes how mfr's product can eliminate wet basement walls. The product is applied to the foundation wall, in conjunction with fabric, and is said to form a tough, waterproof, seamless membrane that will not rot or deteriorate.

AIA FILE NO. 3-B
MFR: MAINTENANCE, INC.
Circle 326

HVAC

INFRARED HEATING

Bulletin *CH-100* describes mfr's new line of electric infrared heaters for direct radiant heating of difficult-to-heat indoor and outdoor areas. Principles, advantages, and typical applications of heaters are discussed. (8 pp.)

AIA FILE NO. 30-C-43
MFR: FOSTORIA CORP.
Circle 327

HOME VENTILATION

Home Ventilation Guide describes Home Ventilating Institute's "certified air delivery" program, which requires labeling of capacity of all ventilating products manufactured by HVI members. Ratings for proper labeling of these fans and hood-fans have been established by tests made at the Texas Engineering Experiment Station. The tag, attached to the fan grille, shows the number of square feet, for each type of room, a particular fan will ventilate. The



THE ALL-NEW P&S ROCKER-GLO SWITCH

... the switch that looks right, feels right
and is right for every type of wiring job.

Here is the one switch with the most wanted
features on the market today.

The merest touch causes instant, silent action ...
and Rocker-Glo glows in the dark.

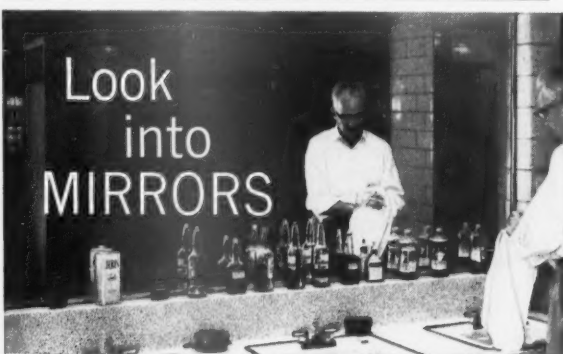
Available in Despard and narrow rocker types.

Write for brochure. Dept. AE 361



60 E. 42nd St., New York 17, N.Y. 1440 N. Polaris Rd., Chicago 51, Ill. In Canada: Renfrew Electric Co., Ltd., Toronto, Ontario

Circle 129 for further information



by Faries-McMeekan for

INDUSTRIES



RESIDENCES



INSTITUTIONS



If you have a question regarding mirrors
or would like a copy of our latest catalog
be sure to write today. We offer a
complete selection of framed and un-
framed plate glass mirrors in standard
and special sizes for walls, doors and
other needs. In small quantities or large
—for your mirror requirements call on:



**Faries-
McMeekan, Inc.**

Write
for catalog

P. O. Box 35, Phone Jackson 2-8660, Elkhart, Ind.

Circle 125 for further information

LITERATURE

guide shows how to plan correct ex-
haust ventilation—where to locate
the fan in the room, how to select
the proper equipment, and how to
duct it. (12 pp.)

AIA FILE NO. 30-D-1

ASSN: HOME VENTILATING INSTITUTE
Circle 328

INSULATION COST REPORT

Recent catalog, in report form, shows
a cost comparison on insulations
used for an underground heat dis-
tribution system. Calculations used
in findings are based on National
District Heating Assn.'s method for
measuring heat loss. Formulas cited
show that a small difference in insu-
lation efficiency can actually result
in a large heat loss resulting in in-
creased heat costs. (4 pp.)

AIA FILE NO. 37-D-21

MFR: RIC-WIL, INC.

Circle 329

BATHROOM EQUIPMENT

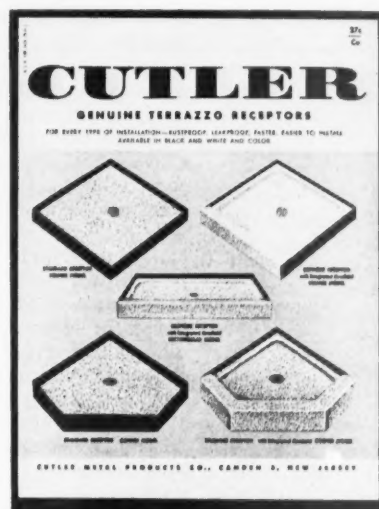
TOILET COMPARTMENTS

Four-color catalog No. TC-61 covers
mfr's complete line of toilet compart-
ments, hospital cubicles, dressing en-
closures and urinal screens. Illustra-
tions, specifications and engineering
details are included. Pocket-size com-
partment color chart accompanies
brochure. (16 pp.)

AIA FILE NO. 35-H-6

MFR: CUTLER METAL PRODUCTS CO.

Circle 330

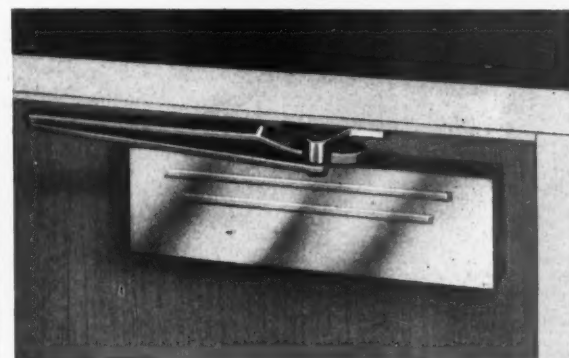


SHOWER STALLS

Two brochures, on mfr's shower stall
and receptor lines, have been issued.
The shower cabinet brochure pre-
sents illustrations and specifications
on five models with descriptions of
accessories, doors and receptors, as-
sembly instructions, and sizes and
dimension. The receptor brochure

FROM RUSSWIN

a new Top-Railer
Door Closer
that's built to
control exterior doors



A new addition to the Top-Railer family! It's the No.
500-4... designed to control exterior doors or heavy
interior doors. Dual controls for closing, latching...
separate control for cushioned back-check. Hold-
open available. Meets Federal Specification No.
3230. For details, write Russell & Erwin Division, The
American Hardware Corporation, New Britain, Conn.

Circle 130 for further information

BETTER FAST WHITEPRINTER at LOWEST PRICE

Finger tip
speed control



FOR INDIVIDUAL OFFICE USE

Finger tip speed control for whiteprints, sepias
and foils

Fastest Diazo Lamp on market

Priced below all other makes

Rotolite prices start at \$129.50

SEND THIS COUPON

ROTELITE SALES CORP., Stirling, N. J. Millington—7-1040 E-3

Please send literature on Rotolite "Expediter"

Name

Concern

Address City State

Circle 131 for further information

LITERATURE

illustrates and describes line of terrazzo receptors. Specifications and reference tables showing sizes and dimensions are given. (6 pp. and 4 pp.)

AIA FILE NO. 29-H-3

MFR: CUTLER METAL PRODUCTS CO.

Circle 331

WASHROOM CABINETS

The 1961 *Washroom Cabinets* catalog contains complete information on mfr's line of paper towel and toilet tissue dispensers and receptacles. This four-color catalog includes installation specifications, unit sizes and colors, and ordering information. Recommendations are included on efficient traffic patterns, correct cabinet placement and installation, and proper ratio of fixtures and accessories based on volume of use.

AIA FILE NO. 29-J

MFR: CROWN ZELLERBACH CORP.

Circle 332

DOORS

SLIDING GLASS DOORS

Mfr's line of sliding glass doors is featured in 1961 catalog. It contains illustrations of installations, detailed drawings, and an information chart. Full and complete specification information is provided, and also data on features, accessories, deliveries, glazing, standard and special hardware, and special sizes available.

AIA FILE NO. 16-N

MFR: ADOR CORP.

Circle 333

ROLLING DOORS/GRILLES

Catalog No. 6101 describes line of rolling doors and partitions. Line includes steel and aluminum rolling service doors, UL labeled fire doors, steel and aluminum rolling grilles and side-coiling grilles, extruded aluminum counter doors, and wood side-coiling partitions. Specifications and detail drawings are included. Series of charts and design details aids selection of proper gauge and type of slats, guide type, power units and other components. (20 pp.)

AIA FILE NO. 16-D

MFR: THE COOKSON CO.

Circle 334

DOOR CATALOG

Mfr's *Symphonic*, flush, bifold, and stile and rail doors are illustrated in 1961 door catalog, now available. The booklet features full-color photographs and architect's drawings, including cutaway details, of extensive line of doors. Also included are charts giving complete technical information and specifications. Design

possibilities and installation tips for the bifold doors also are contained. (8 pp.)

AIA FILE NO. 19-E-1

MFR: SIMPSON TIMBER CO.

Circle 335



HOLLOW METAL DOORS

Mfr's line of hollow metal doors with matching frames and hardware are described in catalog No. 2040-1. This booklet gives complete data on doors, frames, and hardware and shows how they can be selected from one source with all units engineered to complement each other. Featured is the *Medallion* hollow metal door. Other styles are shown in flush and panel designs, as well as louvered doors. In addition, transom frames, side-lights, and borrowed lights are described and construction details given. The hardware section contains illustrations of various types of locksets, such as cylindrical, mortise, and deadbolt types, anti-panic devices, hinges, bolts, closers, stops, and bumpers. (32 pp.)

AIA FILE NO. 16-A

MFR: CECO STEEL PRODUCTS CORP.

Circle 336

WOOD

PLYWOOD CATALOG

The complete line of mfr's standard and specialty plywoods are colorfully illustrated and described in the 1961 plywood catalog currently available. Printed in full-color, the catalog contains complete grade, physical characteristics, specifications and color photographs of *Lifeclad* prefinished plywood and matching flush doors; redwood plywoods; Douglas fir specialty plywoods; hardwood and specialty plywoods; and industrial overlaid plywoods. (16 pp.)

AIA FILE NO. 23-L

MFR: SIMPSON TIMBER CO.

Circle 337

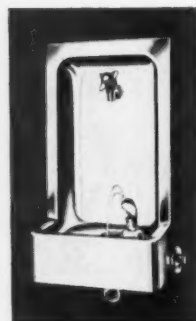


The gleaming beauty of stainless steel provides the modern touch

Stainless Steel, the modern metal of the sixties, is used in this smartly-styled recess fountain by Halsey Taylor.

It is highly favored for installations in foyers, corridors and offices, providing the lifetime beauty and service of stainless steel and the dependability and health-safety of Halsey Taylor design.

The Halsey W. Taylor Co., Warren, Ohio



Here is another Halsey Taylor Stainless Steel wall-type...a semi-recessed unit.



Write for latest catalog, or see Sweet's or the Yellow Pages

THIS MARK OF LEADERSHIP IDENTIFIES THE MOST COMPLETE LINE OF MODERN DRINKING FIXTURES

341

Circle 132 for further information

from one end of the kitchen to the other..



Courtesy of Christine Pensinger Associates

PLAN A COMPLETE
WATER SERVICE SYSTEM with

**T&S Stream-Mated
WATER FIXTURES**

more sanitary, durable, trouble-free

When you pick the most practical layout for your new or remodeled kitchen, pick the most practical water fixtures to complement it. Leading food facility architects, specifying engineers, and plumbing contractors—the men who know—specify T&S quality-built fixtures to make that big difference in the smooth-operating efficiency of every type of kitchen, large or small. Heavy-duty construction, finest materials, precision engineering, quality control, guaranteed satisfaction...all these are plus features you get with every T&S unit at no premium in cost. Insist on a complete T&S stream-mated system for integrated water service on a par with the kitchen you have planned.

**T&S SPECIFICATION MANUAL
FREE to kitchen planners!**

This complete T&S manual of plumbing fixtures and specialties helps you design an entire kitchen layout for most efficient water service. It contains full specifications and roughing data of water units for every purpose to save time, steps and money in your planning. Write or call today for your personal, registered copy.

**SPECIFICATION
MANUAL**
PLUMBING FIXTURES
AND SPECIALTIES FOR
INSTITUTIONAL KITCHENS



See your dealer or write for Product Bulletins on:
PRE-RINSE • GLASS FILLERS • WATER STATIONS • FAUCETS
PEDAL VALVES AND SERVICE FITTINGS • POT FILLERS
KETTLE RADDIOS • SPRAY NOSES • ACCESSORIES
LAB-FLO LABORATORY SERVICE FIXTURES



T&S BRASS & BRONZE WORKS, INC.

128 MAGNOLIA AVE., WESTBURY, L.I., N.Y.

Telephone: EDgewood 4-5104

LITERATURE

LUMBER SPECS

A guide to grades, uses and specifications of West Coast lumber is offered. It covers Douglas fir, West Coast hemlock, Western red cedar, Sitka spruce and white fir. Categories analyzed are: beams and stringers, bevel siding, boards, ceiling, drop siding, finish, flooring, joists and planks, light framing, paneling, posts and timbers, and roof decking. Material is presented in convenient tabular form, for the most part. A valuable reference on these different types of lumber. (18 pp.)

AIA FILE NOS. 19-A-1,2

ASSN: WEST COAST LUMBERMEN'S ASSN.

Circle 338

LUMBER SOURCE GUIDE

The 1961 edition of the *Where To Buy* directory, compiled by West Coast Lumbermen's Assn., is available. It serves as a directory to some 250 sawmills in the Douglas fir region, with capacity, facilities, species produced and each mill's major and specialty items. The reference also lists: timber-fabricating companies; wood pipe manufacturers; and wood treating companies. A list of commonly used lumber abbreviations is included. (52 pp.)

AIA FILE NO. 19-A

ASSN: WEST COAST LUMBERMEN'S ASSN.

Circle 339

GLASS

GLASS DRAINLINE

A revised and expanded catalog, PE-30, on Pyrex drainline has been issued. The catalog contains product and property data and lists advantages of the corrosion-resistant glass system for disposal of chemical wastes. Full details on available fittings, photographs, schematic drawings and charts are included along with a sample specification sheet. (16 pp.)

AIA FILE NO. 19-B-8

MFR: CORNING GLASS WORKS

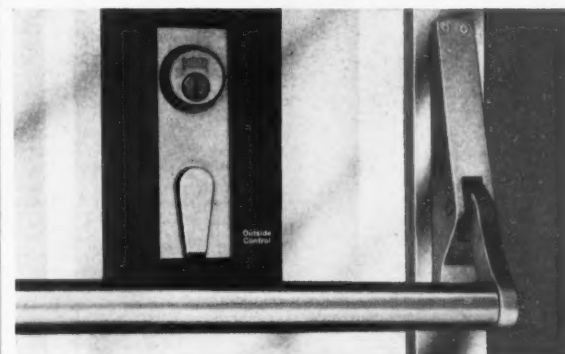
Circle 340

COLORS IN GLASS BLOCKS

Ceramic-face glass blocks now come in twelve colors, according to mfr's announcement. To the four original colors—coral, yellow, pastel blue and pastel green—have been added eight more: white, black, deep red, deep blue, deep green, orange, charcoal gray, and walnut. The color is fired on the face of the block at an extremely high temperature, fusing the color to the glass. The color becomes a part of the block and cannot chip

FROM RUSSWIN

a new, narrow-stile
concealed exit bolt
that fits 99 % of
all metal doors



Russwin Series 60 Concealed Exit Bolt with unique telescoping vertical rods is adjustable to fit virtually all narrow line aluminum or hollow metal doors. And it is completely reversible. Write Russell & Erwin Division, The American Hardware Corporation, New Britain, Connecticut.

Circle 134 for further information

discover the remarkable
system of



- NO WELDING
- NO THREADING
- NO NUTS, WASHERS, BOLTS TO ASSEMBLE

BUILD IN MINUTES...



WRITE Dept. 43-AE for facts on "INSTANT STRUCTURE" that could save you thousands of dollars in labor and materials costs!
THE HOLLANDER MFG. CO. • 3841 Spring Grove Ave. • Cincinnati, O.

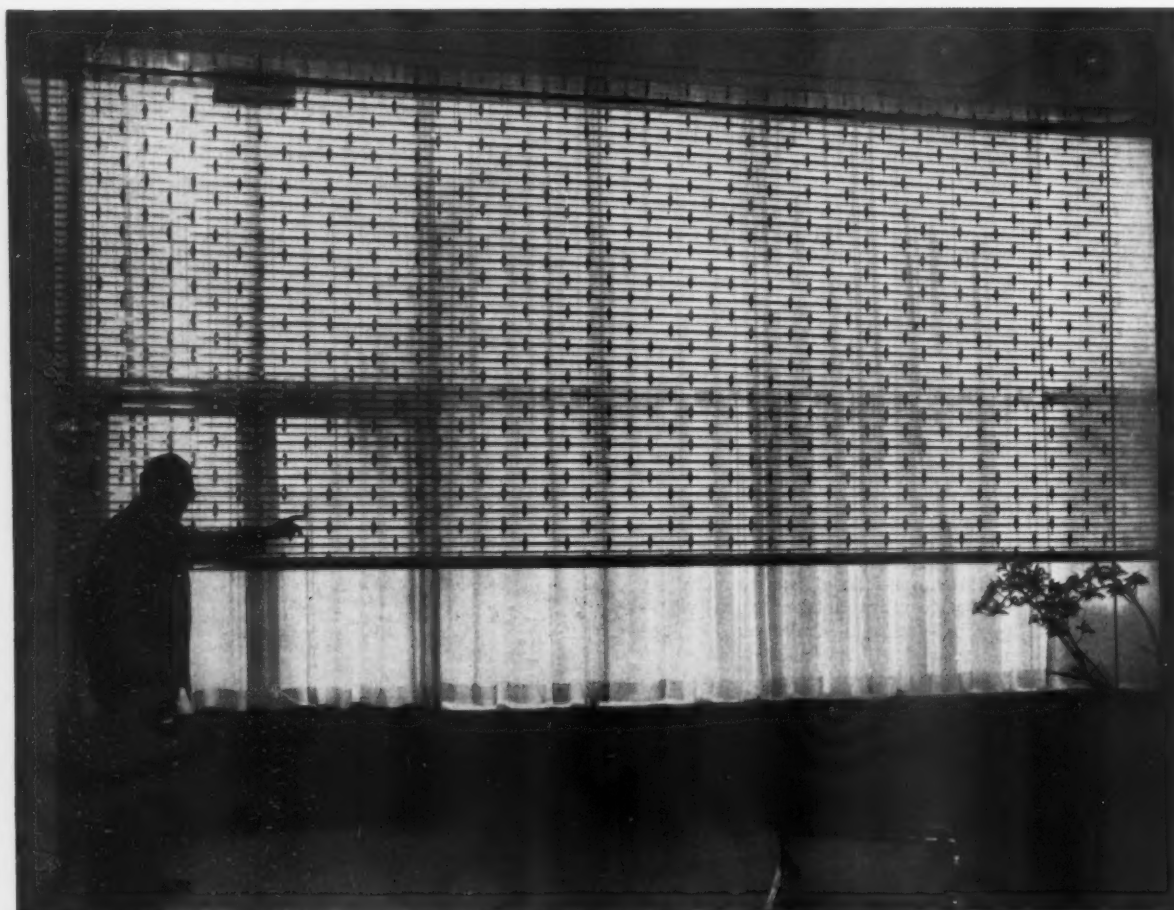
Circle 135 for further information

Circle 133 for further information

March 1961



Light and airy as a butterfly in appearance
...yet they give "ROLLING STEEL DOOR" protection



STAINLESS STEEL GRILLE IN THE CLEVELAND ART MUSEUM • ARCHITECTS: HAYS & RUTH

Cornell Rolling Metal Grilles for Schools, Banks, Museums, Air Terminals and other buildings where protection is necessary and good design desirable.

Rolled up, they are out of sight. Rolled down, they are a positive and attractive barrier against entry.

Widely used to protect counter openings and to partition school corridors without obstructing light, air and vision.

Exclusive Butterfly Design Grilles can be furnished in stainless or galvanized steel, bronze, and in silvery satin or color anodized aluminum. Great design possibilities.

Manual or motor operation.

CORNELL IRON WORKS, INC.

ESTABLISHED 1828

36th Avenue and 13th Street, Long Island City 6, N. Y.

REPRESENTATIVES IN ALL PRINCIPAL CITIES



Circle 136 for further information



ROLLING STEEL DOORS



1 1/4" FLATSLAT ROLLING SHUTTER

LITERATURE

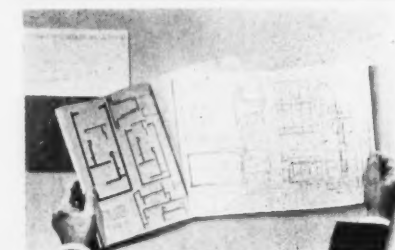
or peel. It is adaptable for either indoor or outdoor use. The 4" thick glass blocks have an insulation value equivalent to an 8" masonry wall and are available in both 6" and 8" sizes.

AIA FILE NO. 26-A-5

MFR: KIMBLE GLASS CO., SUBSIDIARY, OWENS-ILLINOIS GLASS CO.

Circle 341

COMPONENT CONSTRUCTION



METAL CURTAIN WALLS

A curtain wall index to mfr's line of wall systems, is offered. It includes scaled details for nine different aluminum and stainless steel systems, and details for standard doors, louvers, and vertically pivoted windows. Direct tracing and further development of details are facilitated by lift-out sheets of transparent vellum, printed in duplicate. These sheets also help simplify substitution of alternate details.

AIA FILE NO. 17-A

MFR: MICHAEL'S ART BRONZE CO.

Circle 342

PORCELAIN ON ALUMINUM

Brochure describes porcelain enameled aluminum for use on wall panels, spandrel panels and complete walls. It shows many shapes available and some of the many colors. Several applications are shown in four-color illustrations. (8 pp.)

AIA FILE NO. 17-A

MFR: H. H. ROBERTSON CO.

Circle 343

OFFICE AIDS

A/E SCALES

Bulletin No. 60-AE describes mfr's line of architects and engineers scales. Construction features, classifications of scales, and size range are described. (2 pp.)

AIA FILE NO. 35-H-3

MFR: V. & E. MANUFACTURING CO.

Circle 344

DRAFTING MACHINE

Illustrated bulletin describes mfr's model 3300 drafting machine. Special emphasis is placed on the 20" arm model which covers a drawing area up to 34" x 44". Mfr states machines have features usually found only in

larger, more expensive drafters. Specifications for 16", 18" and 20" arm models are included, together with a section on scales available for these machines.

AIA FILE NO. 35-H-3

MFR: V. & E. MANUFACTURING CO.

Circle 345

PLUMBING



PLASTIC PIPE

Catalog TR-270A provides information on mfr's plastic pipe. It contains a table of properties, working pressure, flow chart, and other pertinent information. It also covers recommended procedures for: cutting, connecting, installing, testing, and back-filling. Also cited are a few related precautions in use of the pipe. (10 pp.)

AIA FILE NO. 29-B-8

MFR: JOHNS-MANVILLE CORP.

Circle 346

HEAT EXCHANGERS

Complete line of heat exchangers is covered in comprehensive catalog compiled by mfr's engineering staff. Catalog is indexed-tabbed for quick reference. It contains construction details and engineering data as well as selection charts for all types of converters and instantaneous heaters, both steam-to-water and water-to-water heat transfer. Statistical tables are of particular value as reference material. (24 pp.)

AIA FILE NO. 29-D-6

MFR: OLD DOMINION IRON & STEEL CORP.

Circle 347

INDUSTRIAL WATER HEATING

Cost-saving ideas on industrial water heating installations, estimating hot water requirements for plant cafeterias, laboratories, manufacturing processes, lavatories, and complete sizing and installation instructions for water heating systems are all

included in *Hot Water For Industrial Plants*. Manual also contains specifications and a pictorialization of mfr's complete line of industrial water heater models. (100 pp.)

AIA FILE NO. 29-D-2

MFR: PERMAGLAS DIV., A. O. SMITH CORP.

Circle 348

VALVE SIZING CHART

Sizing chart bulletin No. JSC-1 shows how to size mfr's sliding gate regulators and control valves. Simplified charts cover steam, liquid, and gas service and cross-reference method of compiling makes sizing easy by eliminating the need for rulers, formulas, or slide rules. Technical data (applying to all makes of valves) tells how to adjust sizing for variations in pressure, temperature, viscosity or specific gravity. (4 pp.)

AIA FILE NO. 34-E

MFR: OPW-JORDAN CORP.

Circle 349

FLEXIBLE TUBING

The Facts About Flexflyte is now available. The brochure describes the construction and uses of *Flexflyte*, a rugged tubing used for ventilation, fume removal and materials handling systems. Included in the booklet is a description of each of the seven types of *Flexflyte*, their characteristics, construction and standard sizes.

AIA FILE NO. 29-B-41

MFR: FLEXIBLE TUBING CORP.

Circle 350

FLOORING

FLOOR TILE

The 1961 catalog of mfr's line of vinyl asbestos and asphalt floor tile is available. The four-color catalog provides very complete architectural specifications and contains illustrations of various colors and patterns available. (12 pp.)

AIA FILE NO. 23-G

MFR: AZROCK FLOOR PRODUCTS DIV., UVALDE ROCK ASPHALT CO.

Circle 351

TILE COMPARISON CHARTS

Two 1961 color comparison charts for asphalt tile and vinyl asbestos tile, are offered. The charts serve as guides to equivalents of the color lines of various member companies of the Asphalt and Vinyl Asbestos Tile Institute. (4 pp. each)

AIA FILE NO. 23-G

ASSN: ASPHALT AND VINYL ASBESTOS TILE INSTITUTE

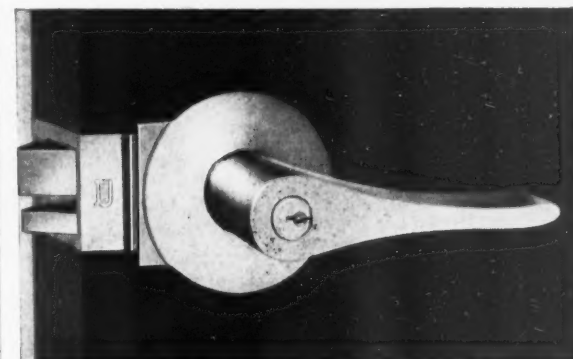
Circle 352

FLOOR FINISHING PRODUCTS

A revised list of laboratory tested and approved floor finishing products, *Finishing Northern Hard*

FROM RUSSWIN

another award-winning
lockset design... the smart
new lever-handle
Beaulev Uniloc

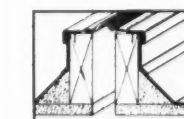
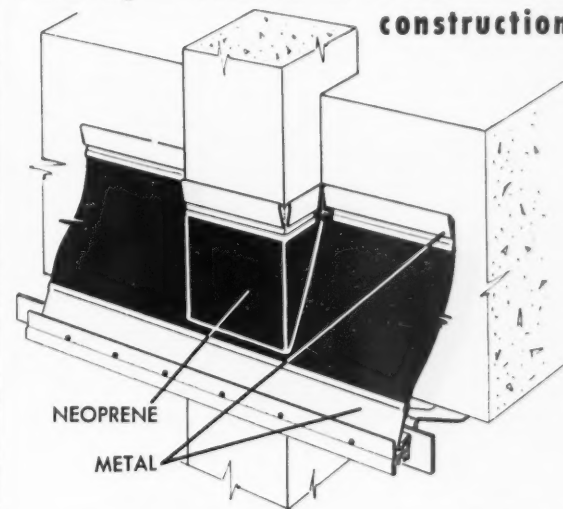


Distinctive, sweeping lever handles... superb "unit construction"! A national design-award winner. One in a complete line of distinctively styled Unilocs built to last the life of your buildings. For complete information, write Russell & Erwin Division, The American Hardware Corporation, New Britain, Conn.

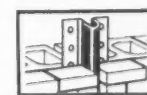
Circle 137 for further information

Expand-o-flash

Passing a column in curtain wall
construction



Curb roof
expansion joint

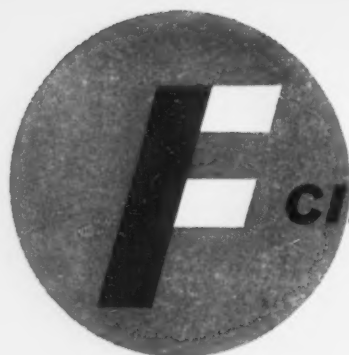


Waterstop in vertical wall



LAMONT & RILEY CO.
300 SOUTHWEST CUTOFF, WORCESTER 7, MASS.

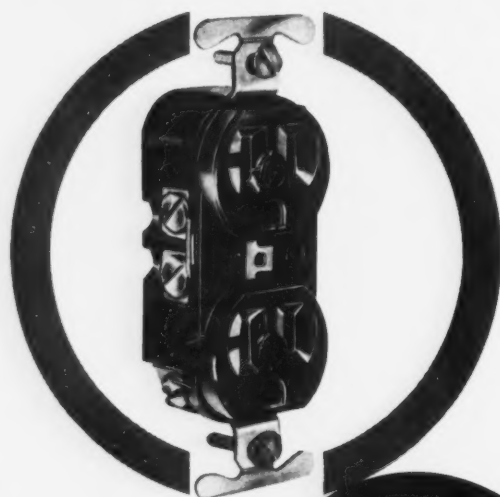
Circle 138 for further information



**NEW
CIRCLE F**

20-AMP

"U"-GROUND DEVICES



... Section 220-3 (b) of the 1959
National Electrical Code states ...

"For the small appliance load in kitchen, laundry, pantry, dining room and breakfast room of dwelling occupancies, (1) 2 or more 20-ampere branch circuits in addition to the branch circuits specified in paragraph 220-3 (a) shall be provided for all receptacle outlets (other than outlets for clocks) in these rooms, and such circuits shall have no other outlets."



Designed to provide full compliance with the revised Code, Circle F's new No. 2532 does much more! It becomes a "universal" outlet! It accommodates appliances, heavy-duty portable tools, business machines, etc., having substantial energy requirements, where the new 20 A.-125 V. plug cap (No. 2528) is necessary. It also accommodates 15 A.-125 V. 3 wire U-ground and standard parallel blade caps. One outlet for all! Circle F's quality is tops and the price is right. Contact your Circle F representative for complete details.



TRENTON 4. NEW JERSEY

Circle 139 for further information

LITERATURE

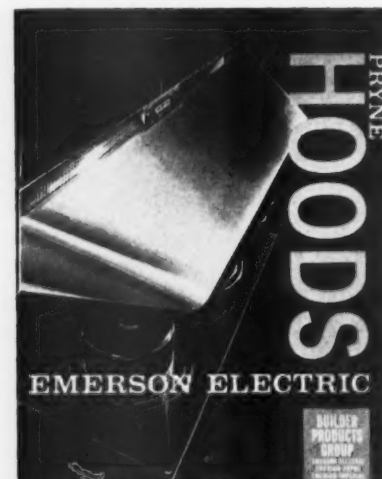
Maple the MFMA Way, is available. The listing now includes both the penetrating sealer and the bakelite-varnish type of floor finishes, together with a number of products tested under the epoxy and high solids, high viscosity provisions of the current specification.

AIA FILE NO. 25-G

ASSN: MAPLE FLOORING MANUFACTURERS ASSN.

Circle 353

MISCELLANY



KITCHEN HOOD CATALOG

Current four-color catalog describes FashionLine kitchen ventilating hoods. Covering self-contained, vertical discharge, "duct-free", island and oven hoods as well as the retractable and tilting hoods, the catalog also features a unique, illustrated index page for fast reference. Sizes, finishes and features for every hood in the line, plus accessory items are described in detail. Dimensional drawings for all hoods are given in a separate brochure inserted in this catalog. (8 pp.)

AIA FILE NO. 35-C-11

MFR: EMERSON-PRYNE CO.

Circle 354

MOTEL SOUND SYSTEMS

Recent bulletin describes music and sound systems for motels and hotels. Systems can provide recorded or AM or FM music, emergency paging to any room, lobby or grounds paging and administrative intercom. Systems operating in several motels are described. Equipment is offered for the first time on a somewhat "standard" basis, with units adaptable to unusual requirements available on custom basis.

AIA FILE NO. 31-i-7

MFR: RAULAND-BORG CORP.

Circle 355

LOW VOLTAGE EQUIPMENT

Fall, 1960, *Buy Log of Low Voltage Equipment* is complete purchasing guide to mfr's lines of: service entrance equipment, safety switches, tumbler switches, wireway, circuit breakers and enclosures, panelboards, switchboards and busways. Descriptions of units, illustrations, and list prices included. (92 pp.)

AIA FILE NO. 31-D

MFR: GENERAL ELECTRIC CO.

Circle 356

REFRIGERATION EQUIPMENT

Comprehensive catalog describing line of commercial refrigeration is offered. Includes illustrations and complete descriptions of line, together with concise tables. Detailed information on specifications, capacities and accessories is included to aid selection. Also contains a completely detailed series of rapid selection tables for mfr's walk-in coolers, freezers and hardening rooms. (16 pp.)

AIA FILE NO. 30-F-2

MFR: MCQUAY, INC.

Circle 357

GLASS-COATED SMOKESTACKS

Four-color brochure describes glass-protected smokestacks, which are made of special corrosion resistant glass fused to steel. Information is provided comparing the glass-protected stacks with plain unlined steel and brick or gunned-concrete stacks. Comparative maintenance figures, photos of typical installations, plus additional listings of companies using glass-protected stacks are shown.

AIA FILE NO. 14-H

MFR: A. O. SMITH CORP.

Circle 358

DRAPERY HARDWARE CATALOG

A 1961 drapery hardware catalog is offered. It includes complete specifications for mfr's new dual channel Architrac, an extruded aluminum traverse track which, when recessed in plaster, becomes a permanent part of the structure. In addition, the catalog provides information on cut-to-measure traverse equipment for all types of drapery installations.

AIA FILE NO. 27-C

MFR: KIRSCH CO.

Circle 359

TERMITE CONTROL

How To Build Out Termites contains information on wood fungi, the carpenter ant, drywood and dampwood termites, the powder-post beetle and other enemies of wood. The booklet describes the proper procedures for "building out" termites in wood and slab-type construction.

AIA FILE NO. 19-A-3

MFR: TERMINIX DIV., E. L. BRUCE CO.

Circle 360

DOCUMENTS

The documents listed below are available through the associations and agencies cited. All requests should be directed accordingly.

American Concrete Institute, P. O. Box 4754, Redford Station, Detroit 19, Mich.

Fatigue of Concrete, ACI Bibliography No. 3. 38 pp. \$2.50.

This bibliography lists and annotates 114 significant works published since 1898 on the fatigue of plain and reinforced concrete. Titles cover a wide range of concrete fatigue tests, including the results of studies made in compressive and flexural fatigue loading of plain and reinforced concrete and of the resistance of bond to fatigue loading. Investigations involving impact are not included. The references are representative of the historical background and reflect desirable current practices in the field.

Concrete Improvement Board of Metropolitan Detroit, P. O. Box 4663, Detroit 34, Mich.

Manual on Good Concreting. \$1.75 for 3-ring binder and \$.50 for each recommendation: General Recommendation on Responsibility for Concrete Control, Sampling, and Testing Laboratories, 3 pp.; Recommendations for Exposed Portland Cement Residential Paving, 3 pp.; Recommendations for House Basements, 7 pp.; Recommendations for Winter Concreting, 2 pp.; Recommendations for Hot Weather Concreting, 3 pp.; Ready-Mixed Concrete Purchase Recommendations, 2 pp.

This compilation represents the cooperative effort of the various segments of the concrete industry in the Detroit area. It is intended as a practical guide to good practices, through which the level of excellence in concrete construction may be voluntarily elevated by its practitioners.

American Society for Testing Materials, 1916 Race St., Philadelphia 3, Pa.

Papers of Soils 1959 Meetings, STP 254. 376 pp. \$9.00.

Covers three symposiums and one group of papers dealing with various aspects of soils testing designed to help engineers evaluate soils and their construction applications. The book contains numerous references and extensive graphical material.

March 1961

DIGEST: 27

EFFECT OF HIGH STRESSES ON REINFORCED CONCRETE BEAMS

The following is a summary of a National Bureau of Standards Report on the effect of high stresses on reinforced concrete beams. In the NBS studies, concrete beams reinforced with different types of deformed steel bars were subjected to stresses up to more than 100,000 psi. Further information may be obtained through the NBS Office of Technical Information, Washington 25, D. D.

INTRODUCTION

A study of the effect of the magnitude of stresses in the reinforcement on the flexural behavior of reinforced concrete beams containing deformed steel bars having different stress-strain characteristics and different yield strengths has been conducted recently at the National Bureau of Standards, under sponsorship of the Committee on Reinforced Concrete Research of the American Iron and Steel Institute.¹ In some beams the longitudinal reinforcement was subjected to stresses in excess of 100,000 psi.

The results should provide technical data needed by code writing bodies to formulate safe design practices for concrete structures containing high-strength reinforcement. Economies may thus become possible through use of smaller quantities of higher-strength steel. The study, which involved 12 reinforced concrete beams, was conducted by R. G. Mathey and D. Watstein.

The nominal yield strengths of the reinforcement in the beams tested ranged from 40,000 psi to 100,000 psi. The higher yield strengths contrasted with the stress limit of 20,000 psi allowed in current building codes.

Manufacturers have long been able to produce steel with strengths greater than those of the steels used to establish an allowable stress of 20,000 psi. In some countries where steel is less plentiful than in the United States, the use of smaller quantities of stronger steel reinforcement has become customary. However, there is some concern in this country about the effect of a significant increase of the allowable stress in the reinforcement on cracking, deflection, and resistance to shear and bond stresses. The work described below is the first phase of a long-range study to supply the needed information.

The general purposes of the current investigation have been to determine to what extent higher steel stresses affect the resisting moment, width of cracks, strain in the concrete and steel, deflection, and the manner of failure of beams in which high-yield-strength reinforcement of smaller cross sectional area was substituted for intermediate grade deformed bars. The tests have produced data on the rigidity of beams with different types of reinforcement. They have indicated how short-term deflections can be computed by taking into account the elastic properties of both steel and concrete at various stresses.

1. For further details, see "Effect of tensile properties of reinforcement on the flexural characteristics of beams," by Robert G. Mathey and David Watstein, *Journal of the American Concrete Institute*, Vol. 31, No. 12, p. 1,253 (June 1960.)

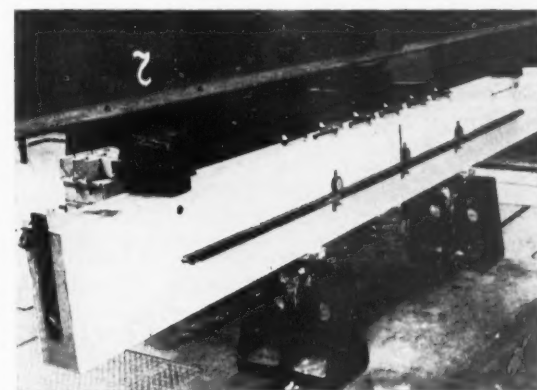


FIGURE 1. Thirteen-foot concrete beam about to be tested for effect of magnitude of steel stresses on flexural behavior in 600,000 lb. hydraulic machine at NBS. This was one of 12 beams reinforced with six types of deformed bars studied at the Bureau.

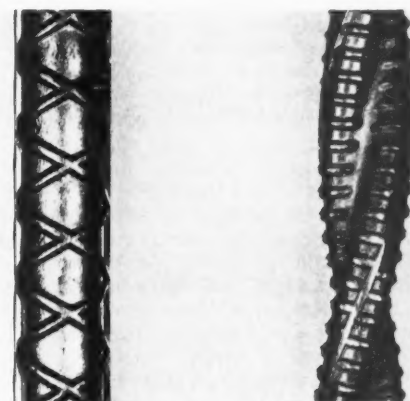


FIGURE 2. Types of deformed steel bars used at NBS to reinforce concrete beams which were studied for the effect of magnitude of steel stresses on flexural behavior. The twisted bar on the right was designed as Type IV bar. The other five types of bars had deformations as shown by the bar on the left.

DESCRIPTION OF SPECIMENS

The 12 reinforced concrete beams tested were alike in all respects except for the amount and kind of tensile reinforcement in each beam. The beams had cross sections of 6" by 15" and an effective depth of 12.8". They were 13' long, and were tested over a span of 10' (Figure 1).

Six types of deformed bars (Types I through VI) which differed both in their yield strengths and stress-strain characteristics were used as tensile reinforcement. Two beams with each type of reinforcement were tested. All the bars were conventional round reinforcing bars with diamond-shaped deformations except Type IV, which were cold twisted ribbed bars with dumbbell-shaped cross sections (Figure 2).

The amount of tensile reinforcement in the beams was

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proportioned inversely to the yield strength, thus providing approximately equal resistance to yielding under tensile forces. This was accomplished by substituting higher-yield-strength bars of smaller diameter, bar for bar. Thus, at a given applied bending moment, the stresses in the steel reinforcing bars were nearly proportional to the yield strength of the steel.

TESTING METHODS

The beams were tested as simply supported beams in a 600,000 pound-capacity hydraulic machine. To facilitate the placement and reading of Tuckerman optical strain gauges on the tensile faces of the beams, the beams were placed in the testing machine in an inverted position.

The width of cracks was measured with the 11 Tuckerman gauges arranged in two rows located at equal distances from the longitudinal center line of each beam. Deflections at the center of span were measured with 0.001 inch dial gauges attached to aluminum bars whose ends were supported at the sides of the beams under the concentrated loads. Strains in the tensile reinforcement at midspan were measured with bonded-wire electrical-resistance strain gauges attached at diametrically opposite points at midplane of the longitudinal bars. The compressive strains in the concrete were measured with the same kind of gauges.

RESULTS OF TESTS

The test results showed that the stress-strain characteristics (Figure 3) varied from linear with well-defined yield points to curvilinear, the latter observed with gradually yielding steel bars.

In the study, the comparative values of deflections (Figure 4), compressive strain in the concrete (Figure 5), and widths of cracks (Figure 6), were reported with the values observed in the control beams containing Type I bars taken as unity. These Type I bars are intermediate grade steel bars of the type currently used in construction. Data was presented as functions of computed stresses in the steel bars, with ratios of stressed in the highest-yield-strength bars ranging up to 2.5 times that in the control beams.

For stress ratios of 2.5, the ratios of deflections to those in beams with Type I bars were about 2.3 for the beams with bars having a linear stress-strain characteristic (Type V bars). However, beams with gradually yielding steel bars (Types IV and VI) showed a more rapid increase in deflection with increasing stress.

The ratios of observed compressive strains in the outermost fibers of the concrete to those in control specimens also fell into two distinct groups. For bars with linear stress-strain characteristics, the strain ratios ranged up to 1.6, and for gradually yielding steels up to 1.9.

The effect of increasing the steel stresses on width of cracks was nearly the same for bars of all types. Thus, at computed stresses equal to 0.5 of the yield strength in all cases, the maximum ratio of crack width to that in the control beams was 3.1, and it varied from 3.0 to 3.2 for stresses equal to 0.75 of the yield strength.

The ultimate resistance of the beams to bending was not appreciably affected by the tensile properties of the longitudinal reinforcement proportioned so as to have a constant total resistance to tensile forces. All beams failed at approximately the same load. However, beams containing the steel bars with a nominal yield strength of 100,000 psi failed either in compression or simultaneously in tension and compression, while all other beams failed in tension.

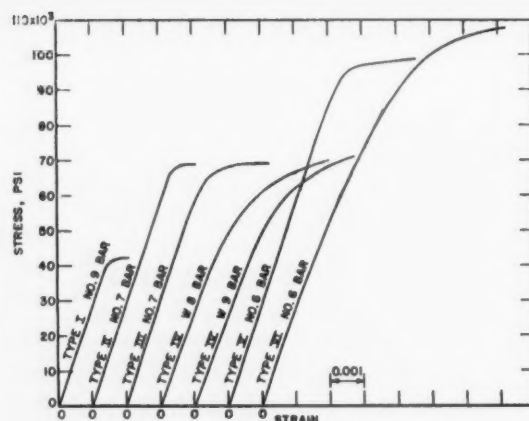


FIGURE 3. This graph shows how stress-strain characteristics varied from linear with well-defined yield points to curvilinear, the latter observed with gradually yielding steel bars.

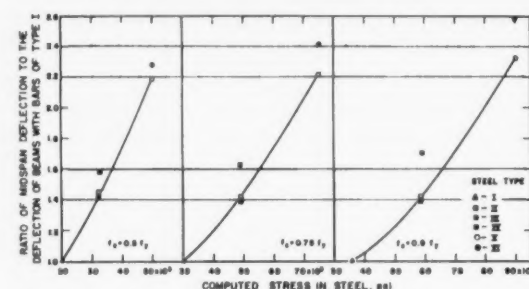


FIGURE 4. The effect of higher steel stress on the midspan deflection is shown in this graph. The graph presents relative deflection values for computed steel stresses equal to 50, 75, and 90 per cent of the nominal yield strengths of the bars.

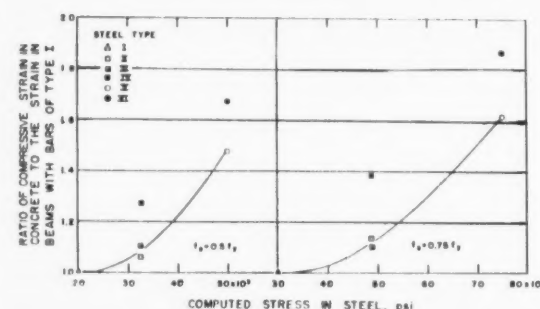


FIGURE 5. Comparison of compressive strains in beams with computed steel stresses equal to 50 and 75 per cent of the nominal yield strengths are shown in this graph.

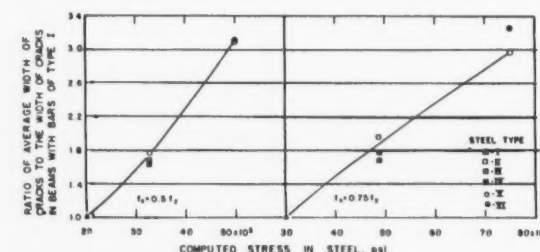


FIGURE 6. This graph presents a comparison of the average widths of cracks in beams reinforced with different types of deformed steel bars.

BOOKS

Cemented Carbides by Paul Schwarzkopf and Richard Kieffer. New York: The MacMillan Co., 1960. 349 pp., illus. \$15.00.

Covers the technology, the composition, the properties, and the methods of testing these tool materials. Work is concerned primarily with the commercially important composites of pure refractory material and binder metal of high ductility.

How to Use Meters, Second Edition Revised, by John F. Rider and Sol D. Prenskey. New York: John F. Rider Publisher, Inc., 1960. 210 pp., illus. \$3.50.

An updated introduction to electric and electronic measuring devices emphasizing practical aspects and basic principles. New material on transistorized voltmeters, on more highly sensitive instruments, on meters providing 250° scales, on transducers, and other modern advances since 1954 edition of book.

Introduction to Geophysical Prospecting, Second Edition, by Milton B. Dobrin. New York: McGraw-Hill Book Co., Inc., 1960. 446 pp., illus. \$9.50.

Most of the developments in geophysical prospecting since the first edition of this text have been in the field of seismic prospecting, particularly as they affect instrumentation, and refraction and reflection techniques. Other augmentations of the text are found in the discussions of aeromagnetic prospecting, electrical prospecting, and gravity interpretation. Three chapters on well logging, radio position location, and geophysical research have been deleted, and a new chapter on coordination of geology and geophysics has been added.

Elevators; Electric and Electrohydraulic Elevators, Escalators, Moving Sidewalks, and Ramps, Third Edition. New York: McGraw-Hill Co., Inc., 1960. 388 pp., illus. \$11.50.

This is a practical treatment covering the construction, operation, and maintenance of vertical transportation equipment. Includes information on manlifts, screwlifts, freight elevators, garage automatic-parking elevators, home elevators, and stairlifts. New edition has been completely revised. New edition has been updated to comply with the 1955 American Standard Safety Code for Elevators, Dumbwaiters and Escalators.

The Chemical Analysis of Air Pollutants by Morris B. Jacobs. New York: Interscience Publishers, Inc., 1960. 430 pp., illus. \$13.50.

Describes methods of determining the kind and amount of air contaminants in industrial and metropolitan areas. Well illustrated with ample references at end of each chapter. Appended are a series of tables of analytical data which can be used for comparative information in order to evaluate the results obtained with the methods of analysis detailed in the text.

Compression and Transfer Moulding of Plastics by J. Butler. New York: Interscience Publishers, Inc., 1959. 230 pp., illus. \$5.75.

This monograph, concerned with molding of plastics, is based on facts as determined by experience and practice, and is one of a Plastics Institute series now being revised and made generally available for the first time.

Industrial Electronics and Control, Second Edition, by Royce Gerald Kloeffler. New York: John Wiley and Sons, Inc., 1960. 540 pp., illus. \$10.00.

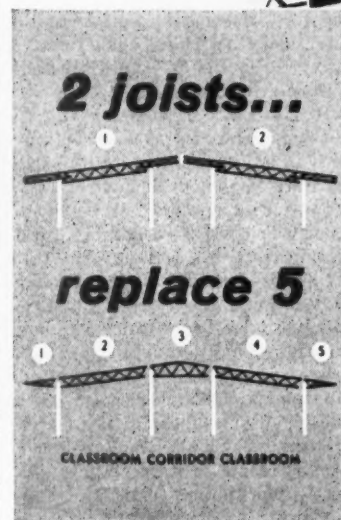
This college text for engineers begins with the theory of solid state conduction and leads to the theory of rectification and amplification by way of semiconductor devices rather than by way of gaseous and vacuum tubes. Tube theory follows logically, and offers a parallel approach to industrial electronic applications: semiconductor devices and tube devices.

How To Design and Install Plumbing, Fourth Edition, by A. J. Mathias, Jr. Chicago: American Technical Society, 1960. 446 pp., illus. \$4.95.

A practical guide to architects and others concerned with sanitary facilities in building and construction. Principles are developed and put to use with new design and new materials in up-to-date practice: a complete set of blueprints helps explain the design and installation of an entire plumbing system for a modern six-room, two-bath residence.

Fundamentals of Electronics by Matthew Mandl. Englewood Cliffs, N. J.: Prentice-Hall, Inc., 1960. 574 pp., illus. \$10.60.

This medium-level text aims to provide a foundation for further study in any of the more specialized branches of electronics. Covers both basic theory and practical applications.

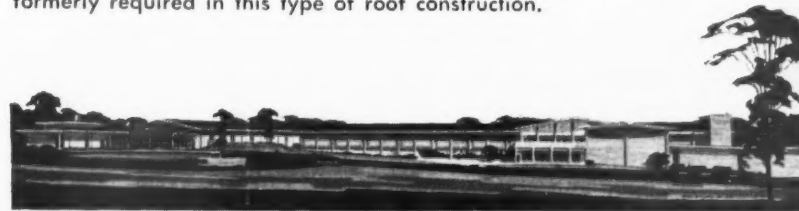


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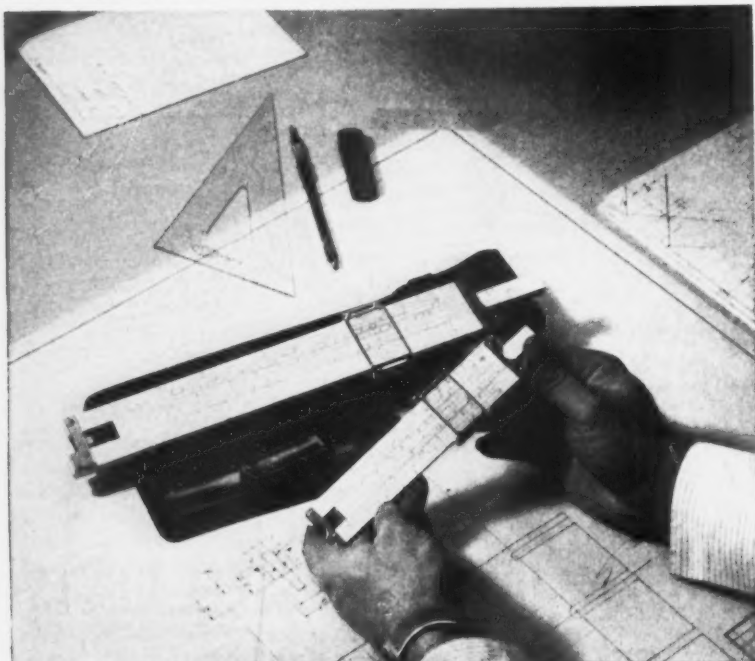
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NAMES

T. Y. LIN, PE It is only little more than two years since the nation's first high-rise, prestressed concrete building was completed (the 14-story Diamond Head Apartment Building in Honolulu). Ten years ago, only two highway bridges in this country were constructed with prestressed members. Until recently, prestressing was widely regarded as a curious European practice. Steel was king and nothing challenged its regnancy. Since then, word has gotten around. The word of course, is prestressed concrete, and the chief spokesman, Professor T. Y. Lin of the University of California at Berkeley.

Professor Lin's association with prestressing began in 1950 when he was called in as a consultant by the California State Highway Department in connection with one of the first prestressed highway bridges to be built in the country. Says Lin, "As soon as I ran tests on it, I realized the fantastic possibilities. It's been my specialty ever since."

Lin's specialty has become big business since that first bridge. Fifteen per cent of the bridges built annually are now prestressed and more than \$1 billion worth of prestressed concrete has been produced. Right now production has passed the \$400 million mark and by 1965, Lin anticipates that the total will hit \$1 billion a year.

"The biggest handicap that prestressed concrete has today," says Lin, "is that most engineers still don't know enough about it to use it." The smiling, bespectacled professor is seeing to it that more and more engineers and architects find out about this most significant material.

In addition to his academic chores as chairman of the division of structural engineering at U/C, he is president of the firm of T. Y. Lin & Associates in Los Angeles. He and his associates are regular consultants to a host of prestress manufacturers, architectural firms such as Skidmore, Owings & Merrill, the governments of Venezuela and Kuwait, the U. S. Navy and the State of California Division of Architecture. The Lin organization dedicates itself to not just advising its clients on prestress technique, but also to teaching the techniques to the clients' engineers.

With a staff of over 20 engineers, Lin and his associates perform work in this country and throughout the world. With the help of electronic computers to handle the voluminous mathematical computation work, the relatively small staff attacks the mysteries of prestressing on all fronts—from research and design on through production and construction.

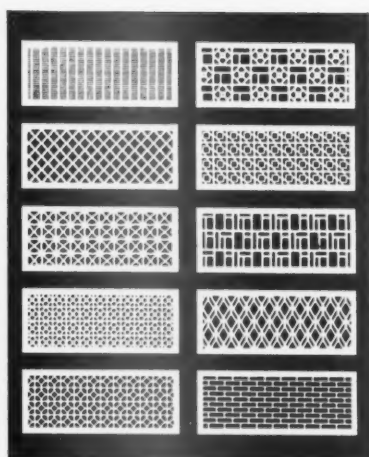
Professor Lin, whose Master's thesis on structural analysis is considered a classic in its field, is the author of the pre-eminent *Design of Prestressed Concrete Structures*, which in addition to its numerous printings in English and the widely read Spanish edition, has now been translated into Russian by the USSR Academy of Construction and Architecture. He has written over 40 technical papers and reports and is co-author (with Professor Boris Bresler) of *Design of Steel Structures*.

For research on prestressed concrete during 1953-54 at the University of Ghent, Belgium, Professor Lin was granted a Fulbright Award on the basis of his performance in research and design of prestressed concrete structures. In 1957, he was general chairman for the World Conference on Prestressed Concrete held in San Francisco. In 1958, he headed the American delegation to inspect concrete engineering in Russia. He is a former director of the Prestressed Concrete Institute, and chairman, bridge loading committee, American Society of Civil Engineers. He is vice president of the International Federation for Prestressing and director of the Prestressed Concrete Institute.

From the days of that first highway bridge in California, Professor Lin has gone on to some of the most impressive engineering achievements in the world today. A notable example is the *Hipodromo Nacional* racetrack, near Caracas, Venezuela, regarded as one of the most ingenious applications of prestressing yet devised.

As director of the structural engineering laboratory on the Berkeley campus, Professor Lin has at his disposal one of the most elaborate concrete research set-ups existing in the U.S. There he continues his research, speaking all the while to architects and engineers, who will build "the beautiful and economic structures in their attempts to utilize this new material."





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EDITORIAL

A PERSONAL NOTE: Through centuries of time, mankind has acquired the ability to condition and control environment and to produce those arts, sciences and systems of learning and behavior whereby we live. Western civilization, as we know it, has existed as a glorious extension of the aesthetic and intellectual precepts of the classical world of Greece and Rome. The founding fathers of this nation, notably the Jeffersonian disciples of the Age of Reason, infused the embryonic culture of our country with the exquisite heritage of the ancients. Little did they dream that the next century beyond them would introduce an imbricate order of many scientific ages: steam, steel, hydro-electric, tele-communications, aviation, chemistry, electronic, nuclear and our contemporaneous age of the exploration of outer space.

The first half of this century has already produced through the dynamics of contemporary technology far-reaching changes—tumultuous but fascinating ones—that have exceeded the wildest fires of imagination of any 19th century prophet.

In this sixth decade of the 20th century, men speak of a new frontier. It cannot be the new frontier of technology alone—but it must also exist as a new frontier of human development and experience that will generate greater accomplishments than we have ever known before.

Everywhere in these United States, from the great cities, to the prairies, to the mountain heights where snow eternally lies—over the vast horizon of this great nation—rich in human and material resources—a new frontier of human experience and for positive achievement *does* beckon. It beckons as a challenge to love one's country—above one's self-interest in order to help it realize and fulfill its vast technological and creative potentialities. A finer and more beautiful America is, with certainty, a most worthy goal. As architects and engineers, we have assumed a deep responsibility for this in our lives and times. In our hands—perhaps the *healing* hands of these design professions—rests the development of the total physical environment that we may have and enjoy in the last half of this century.

These professions have the obligation to constantly educate the public about the necessity for comprehensive planning and long-range redevelopment of our cities and towns. If this leadership responsibility is shirked and reduced to meaningless platitudes and

clever soporifics, we will have failed the high promise of our professional mission. High goals and standards have been set for our disciplines, and one must never lose patience with those who (either through ignorance or the self-deceptions of sophistry) fail to understand these objectives.

The "tomorrow" of our lives is already here. As architects, we constitute a vanguard and what we design and plan today becomes a part of the physical fact of the remaining decades of this century and of those beyond. Therefore, if one were to function out of expediency alone, we would deny to ourselves an authoritative and moral position. What is worse, we would deny to successive generations of our citizens, the creative continuity of our culture and our architectural heritage. The physical expression of our culture must now be given greater meaning than at any time in the past. Failing this, we cast the irredeemable shadow over professional worth and professional truth and pathetically surrender the promise of a finer and more beautiful America.

With this editorial, perhaps somewhat declamatory, but nevertheless heart-felt and important to its writer, I take leave, as editor, of this publication. In resuming the private practice of architecture, I earnestly hope that I may be able to put into being some of my own contentions and preachments.

It is with a touch of sadness that I leave, since I have had been given privilege of being the charter editor of Architectural and Engineering News. To have witnessed and experienced the remarkable growth of this magazine from its inception to its present position, has been one of the personal rewards of my professional life. The trust and faith placed in my efforts by the publishers, Messrs. Hagenbuch and Fregan, and by my fine colleagues on the editorial staff, has been an area of deep satisfaction to me and one for which I am most grateful.

I also wish to take this opportunity to introduce to our readers my successor as editor-in-chief, Mr. Stephen A. Kliment. Mr. Kliment, a member of the architectural profession, represents a firm and responsible talent, who I know will earn your respect and who will energetically expand the high standards set by the publishers.

Again, permit me to convey my warmest thanks to everyone for the many kindnesses and courtesies of the past.

John James Carlos



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CALENDAR

- MAR. 6** INTERIOR DESIGN TODAY: exhibition through April 3, Architectural League, New York City.
- 13-17** NATIONAL ASSN. OF CORROSION ENGINEERS: annual meeting, Statler Hotel, Buffalo, N. Y.
- 21-30** AMERICAN CHEMICAL SOCIETY: national meeting, Washington, D. C.
- 28** BUILDING RESEARCH INSTITUTE: plastics study group meeting, Washington, D. C.
- 28-29** FIRST CONSTRUCTION EXPOSITION AND SYMPOSIUM: Connecticut Building Congress, Statler Hilton Hotel, Hartford, Conn.
- APRIL 3-14** PRINCETON SEMINAR: "20th Century city and its major components," six evening sessions, sponsored by N. J. Society of Architects, 120 East Halsted St., E. Orange, N. J.
- 5-7** GAS APPLIANCE MANUFACTURERS ASSN: annual meeting, The Greenbrier, White Sulphur Springs, W. Va.
- 10-29** ANNUAL BIRCH BURDETTE LONG EXHIBITION: exhibition of architectural rendering, Architectural League, New York City.
- 24-28** AMERICAN INSTITUTE OF ARCHITECTS: annual convention, Philadelphia, Pa.
- 30-3** AIR-CONDITIONING AND REFRIGERATION INSTITUTE: board and annual meeting, The Homestead, Hot Springs, Va.
- MAY 1** HOMAGE TO THE GREAT MAKERS: dinner honoring Dr. Gropius, Dr. Mies van der Rohe and Dr. Corbusier under the joint sponsorship of New York Chapter of AIA, Architectural League, and Columbia Architectural Alumni Assn.
- 1-15** EXHIBITION OF MURAL PAINTING: arranged with the cooperation of the American Society of Mural Painters, Architectural League, New York City.
- 14-18** NATIONAL FIRE PROTECTION ASSN: annual meeting, Detroit, Mich.
- 16-18** BUILDING RESEARCH INSTITUTE: spring conferences, Shoreham Hotel, Washington, D. C.
- 17-21** ROYAL ARCHITECTURAL INSTITUTE OF CANADA: 54th annual assembly, Chateau Frontenac Hotel, Quebec City, Canada.
- 22-25** DESIGN ENGINEERING SHOW: exposition and conference, Cobo Hall, Detroit.

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Copper batten seam roofing on the new Senate Office Building, Washington, D. C.

New Senate Office Building has copper roofing for enduring protection

Approximately 75,000 pounds of Anaconda copper were used for the batten seam portion of the roof and the deep, boxed concealed gutter on the new Senate Office Building. In the nation's capital and in cities throughout the country, copper roofs are establishing records of long service and low maintenance costs.



The roof was fabricated and erected by the Overly Manufacturing Company, Greensburg, Pa. A modified "Overly" batten was formed from copper strip. Roofing sheets were formed from 20-ounce cold-rolled copper. Architect of the Capitol, J. G. Stewart. Architects: Eggers and Higgins, New York City. General Contractor: George Hyman Construction Co., Washington, D.C.

A realistic comparison of roofing costs requires the inclusion of two important factors—estimated maintenance costs over the years, and estimated serviceable life of the roofing material. Copper has proved its economy. Performance records covering many years of service show that expected long life and minimum up-keep are based on fact, not guesswork. Here is an example:

When the 47-year-old Grand Central Terminal Building was razed recently to make way for the huge new Pan-American Building, more than 150 tons of sheet copper were removed from the roof. The copper was still sound and beautifully colored by nature's patina. It is also worthy of note that the scrap value of the removed metal was considerably higher than the price for ingot copper prevailing when the roof was installed in 1913.

FOR MORE INFORMATION on Anaconda Sheet Copper for building construction, see your Sweet's File or write for Publication C3-SA. Also, if you do not have your copy, ask for our "Modern Sheet Copper Practices," 109 pages of drawings, specifications, and general information. Address: Anaconda American Brass Company, Waterbury 20, Conn. 6111

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